HUGHES™

DIRECWAY®

DW6000 Series Installation Guide

1033295-0001
Revision 2
September 19, 2003

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Declaration of Conformity

Standards to which Conformity is declared: FCC Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party's name: Hughes Network Systems, Inc.

Address: 11717 Exploration Lane, Germantown, MD 20876

Telephone: 1-866-DIRECWAY (347-3292)

Trade Name: HUGHES, DIRECWAY

Type of Equipment: Two-Way DIRECWAY System

Model Numbers: DW6002 (1032021-0002) DW6000 (1032021-0001)

The Two-Way DIRECWAY System (DW6002 and DW6000) complies with the Canadian ICES-003, Class B standard.

For DW6002

Standards to which Conformity is declared: FCC Part 68

Part 68 Compliance -- This equipment (Two-Way DIRECWAY System: Model Numbers: DW6002) complies with Part 68 of the FCC rules and requirements adopted by the ACTA. On the rear panel of this equipment is a label that contains, among other information, a product identifier in the format US:5L4DT00B1032021. If requested, this information must be provided to the Telephone Company.

The Two-Way DIRECWAY system needs to be installed according to the instructions. Coaxial cables (RX and TX) need to be grounded at the point of entry. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant **26 Gauge** telephone cord and modular plug is provided with this product. It is required to be terminated with a plug type 605 or a FCC plug type 6 position for Australia.

CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunications Line Cord.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local Telephone Company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:5L4DT##B1032021. The digits represented by the ## are the REN without the decimal point (e.g., 00 is a REN of 0.0). For earlier products, the REN is separately shown on the label.

If the Two-Way DIRECWAY System causes harm to the telephone network, the Telephone Company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the Telephone Company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The Telephone Company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the Telephone Company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

If trouble is experienced with the Two-Way DIRECWAY System equipment, for repair or warranty information, please contact

DIRECWAY Technical Support

Address: 11717 Exploration Lane, Germantown, MD 20876

Web: http://www.mydirecway.com

(To send an e-mail, login to your user account on their Web site and then navigate to the Email page.)

If the equipment is causing harm to the telephone network, the Telephone Company may request that you disconnect the equipment until the problem is resolved.

Hughes Network Systems must make any necessary repairs to the modem portion of this equipment in order to maintain valid FCC registration. Do not attempt to repair or service your modem. Return it to Hughes Network Systems.

No repairs can be made by customers. All repairs must be done by Hughes Network Systems Authorized Service Centers (ASCs). This equipment cannot be used on public coin service provided by the Telephone Company. Connection to Party Line Service is subject to state tariffs. Contact the state public utility commission, public service commission or corporate commission for information.

The DW6002 complies with the following telecom standards:

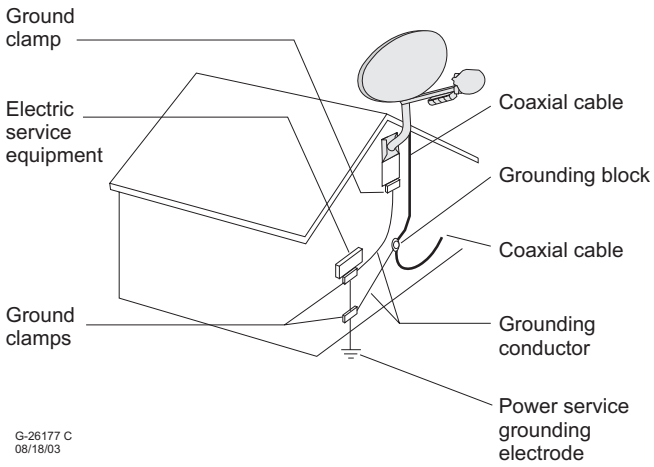
- FCC Part 68 standard for North America
- CTR-21 standard for Europe
- AS/ACIF S002 standard for Australia
- CS-03 standard for Canada

Telephone cord and the plug must be compliant with the corresponding telecom standard in a specific country/continent.

Satellite Dish Antenna Grounding

The outdoor satellite dish antenna used to receive satellite signals and the cable used to connect the satellite dish antenna to the indoor receiving unit are required to comply with local installation codes and the appropriate sections of the National Electric Code (NEC) and in particular Article 810-15, which covers proper installation and grounding of television receiving equipment, as well as to Article 820-33, which specifies that the satellite dish antenna cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical. These codes require proper grounding of the metal structure of the outdoor satellite dish antenna and grounding of the connecting cable at a point where it enters the house (or other building). If you are having a professional installer perform the installation, the installer must observe installation codes. This manual contains instructions on how to make the installation in compliance with the NEC. If additional local installation codes apply, contact local inspection authorities.

Example of Antenna Grounding according to the National Electrical Code instructions contained in "Radio and Television Equipment"



Note: The DIRECWAY Receiver must be grounded through the satellite/ local antenna cable before plugging into the power source, and it must remain grounded thereafter.

HUGHES
NETWORK SYSTEMS

Document Serial Number: 0079

DECLARATION OF CONFORMITY

Application of Council Directives:

RTTE Directive:	*99/5/EC*
Low Voltage Directive:	*73/23/EEC with 93/68/EEC*
EMC Directive:	*89/336/EEC*

Standards to which Conformity is declared:

Radio Spectrum (Art. 3.2):	*EN 301-428,V 1.2.1: 2001*
EMC (Art. 3.1b):	*EN 301-489-12, V1.2.1: 2003*
Safety (Art. 3.1a):	*EN 60950-1:2001*
Health (Art. 3.1a):	*DIN VDE 0848-1:2000; FCC OET Bulletin No. 65: 1997*

HNS Conformity Assessment Reports:

Radio Spectrum:	*HNS-29080*
EMC:	*HNS-29075*
Safety:	*HNS-29073*
Health:	*HNS-24917*
Telecom:	*HNS-29079*

Product(s): **Two-Way DIRECWAY System** [VSAT Product Category]

Model Numbers:	**See Attached.**
Serial Number:	All
Year of Start Manufacture:	**2003**
Manufacture's Name:	**Hughes Network Systems**
Manufacture's Address:	**11717 Exploration Lane, Germantown, Maryland, USA 20876**
Importer's Name:	**Hughes Network Systems**
Importer's Address:	**Saxon Street, Linford Wood, Milton Keynes, United Kingdom MK14 6LD**

The conformity assessment has been done by the following locations:

- Washington Laboratories, LTD. 7560 Lindbergh Drive, Gaithersburg, MD 20879, USA
- CETECOM ICT Services GmbH, Department: Radio/Satellite Communications, Untertuerkheimer Strasse 6-10, D-66, 117, Saarbruecken, Germany

The product carries the CE Mark:

CE

I hereby declare that the above named product is in conformity to all essential requirements of R&TTE, Low Voltage and EMC directives.

Signature:

Eryx Malcolm
Assistant Vice President, Quality
Hughes Network Systems

Place: Germantown, Maryland
Date: August 12, 2003

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Document Serial Number: 0079

Table 1. IDU and Radio Assembly configurations

Item	Model Name	HNS Part Number
Tx/Rx IDU	IDU Model: DW6002	1032021
Tx/Rx IDU	IDU Model: DW6000	1032021
Radio Assembly #1	ISIS Radio Assembly ISIS Transmitter TRIA LNB Vertical Pol. Kit	1032009 1031106 1032353 1030923 1033809
Radio Assembly #2	ISIS-TG1 Radio Assembly ISIS Transmitter TRIA LNB MUX Kit Diplexer	1032552 1031106 1012440 1024572 1033270 1032688
Radio Assembly #3	ISIS-TG2 Radio Assembly ISIS Transmitter TRIA LNB	1032552 1031106 1012440 1024572
Radio Assembly #4	Tigris Radio Assembly TRIA LNB	1025901 1012440 1024572
Radio Assembly #5	Chinnon Radio Assembly Chinnon Transmitter TRIA LNB	1030731 1029635 1030766 1024572
LNB(s)	Intelsat America Eutelsat, Asiasat, Arabsat All bands	1024572 1024572 1024572 1030923
Transmitter	Extended Ku-Band ISIS	1031106
Delta 64W Power Supply	ADP-64AB B	1031105
Lead Year 64W Power Supply	ADP-0641-M2	1031105

Table 1. Antenna System

Reflector Size (m)	Reflector Shape	Manufacturer	Type Series
0.74	Elliptical Parabolic	Prodelin	1740-13x 1740-14x
0.74	Elliptical Parabolic	Prodelin HNS part no.	 1032990-xxxx
0.89	Parabolic	Prodelin	1891-xxx 1892-xxx
0.98	Parabolic	Prodelin	1981-99x 1982-99x
1.2	Parabolic	Prodelin	1132-99x 1134-99x
1.2	Parabolic	Channel Master	124
1.8	Parabolic	Prodelin	1194-99x

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Important safety information

For your safety and protection, read this entire manual before you attempt to install the DW6000. In particular, read this safety section carefully. Keep this safety information where you can refer to it if necessary.

Types of warnings used in this manual

This section introduces the various types of warnings used in this manual to alert you to possible safety hazards.

⚠ DANGER

Indicates an imminent electric shock hazard, which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potential electric shock hazard, which, if not avoided, could result in death or serious injury.

⚠ DANGER

Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates a situation or practice that might result in property damage.

Note: A note provides additional information.

About this document

Scope and audience

This manual describes installing and servicing the DIRECWAY® DW6000 terminal. It addresses installers, network system engineers, and network operators who install, commission, operate, and maintain the system.

Audience profile

The DW6000 is installed by professional telecommunications installers. This product cannot be installed by the end user.

There are four primary audiences:

- HNS Installers – at this time, only HNS installers will install this product.
- Installer trainers, who prepare separate instructions for the installers.
- Call center operators, who respond to user's calls.
- Call center trainers, who train call center operators.

Organization and updates

This manual is organized into the following chapters.

Chapter 1 – Introduction gives an overview of the DW6000 and its components.

Chapter 2 – Installing the indoor equipment provides information regarding installing using satellite-based commissioning (SBC) and configuring the DW6000.

Chapter 3 – The User Interface provides configuration and status. It also provides information about configuring TCP/IP settings on computers connected to the DW6000.

Chapter 4 – DW6000 LEDs and troubleshooting describes LED activity and troubleshooting strategies.

Appendix A – Lat/Long Decimals to Minutes Table provides conversion information for installs where this data is entered manually.

Appendix B – Installing the indoor equipment using dial-up commissioning provides instructions on how to use the backup dial commissioning method.

Appendix C – Installing the DW6000 using Installer Console provides instruction on how to use the Installer Console for commissioning enterprise customers when specifically directed to do so on the installation specification.

Appendix D – Configuring the installer laptop for IP addressing provides information on configuring the laptop in various Microsoft operating systems.

Appendix E – Installing DVADB provides instructions on how to install the optional DIRECWAY Virtual Private Network Automatic Dial Backup (DVADB) feature.

Appendix F – Installation checklist provides an installation checklist.

There is also a safety summary, glossary, list of abbreviations and acronyms, and index.

Conventions

This manual follows the typographical conventions shown below to help clarify instructions:

Example	Explanation
Click **Exit**.	Indicates the names of command buttons that execute an action.
The system displays the following: `Are you ready?`	Indicates all system messages and prompts as the system displays them.
Type **`exit`**	Indicates operator input.
Enter a value in the Time field.	Indicates the names of fields on windows.
Retrieve the following file: *`O:\template\techman_r3`*	Indicates file names or file paths referenced in the manual.
Press **ALT+V** to view the menu.	Indicates function or keyboard keys. Press two keys simultaneously—in this case, Alt and V.
Select the **Edit** menu.	Indicates the names of menu bar options on a software screen.
Go to **Edit** →*Spelling Checker*	Indicates a menu/submenu sequence for selecting an action or option

Related publications

The installation of this product may also require the use of one of the following antenna or outdoor unit manuals:

- ***DIRECWAY Satellite Dish Installation Guide DW4000-Ku Two-Way Ku-band Antenna Model AN4-074*** (HNS 1033833-0001)
- ***DIRECWAY Satellite Dish Installation Guide DW4000 Ku Antenna for Enterprise Mounts Model AN6-074*** (HNS 1032914-0001)
- ***DIRECWAY Outdoor Unit Installation Guide DW4000-098 DW4000-120*** (HNS 1032025-0001)
- ***.89/.98M Ku-Band Rx/Tx Series 1892/1982 Antenna System Assembly Manual*** (Prodelin 4906-629)
- ***1.2m Ku-Band Rx/Tx Series 1132 Antenna System*** (Prodelin 4906-630)

Revision record

Revision	Date of issue	Scope
Rev 1	6/28/03	Initial release
Rev 2	9/16/03	SBC installation instructions revised to use 192.168.0.1; troubleshooting instructions ported from User Guide 1033294-0001.

Chapter 1
Introduction

This chapter addresses the following topics:

- *DW6000 purpose and components* on page 1
- *Specifications and identification of equipment* on page 4

DW6000 purpose and components

The DW6000 is designed to provide Internet or corporate intranet connectivity via satellite through a single DIRECWAY® terminal. The receive and transmit capability is housed in a single chassis as shown in Figure 1.

Note: The instructions in this manual apply to the enterprise-class DW6002 also. The DW6002 includes all DW6000 functionality in addition to being equipped with an internal modem for DIRECWAY Virtual Automatic Dial Backup (DVADB).

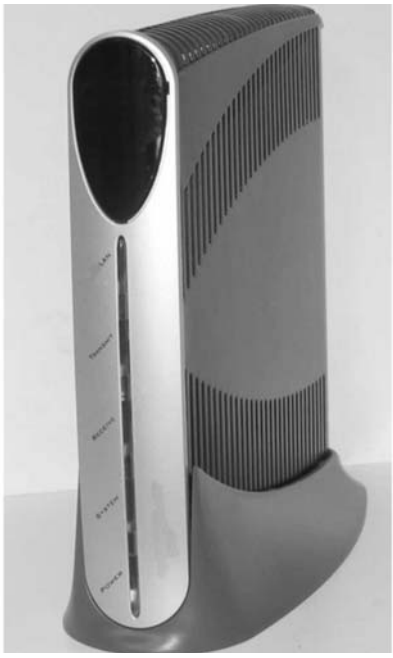


Figure 1: The DW6000

The DW6000, in combination with an antenna and an Ethernet hub or wireless base station, provides satellite connectivity for multiple local area network (LAN) hosts. All the necessary software resides on the DW6000, which serves as the router. Because the software is on the DW6000, there is no need for a computer to run any client software.

The end user or customer must supply and configure all hardware and software necessary to install and operate a wired (Ethernet) or wireless LAN.

Figure 2 illustrates the functionality of the DW6000 within a DIRECWAY network. Note that the DW6000 is independent of operating platforms. It can also be used with devices other than computers, such as point-of-sale (POS) terminals or credit verification devices.

Figure 3 also illustrates the functionality of a DW6000. In this example, an Ethernet hub is connected to the DW6000 and supports a local area network (LAN).

Note: Customers who install networks may need a router rather than a hub, depending on their service plan.

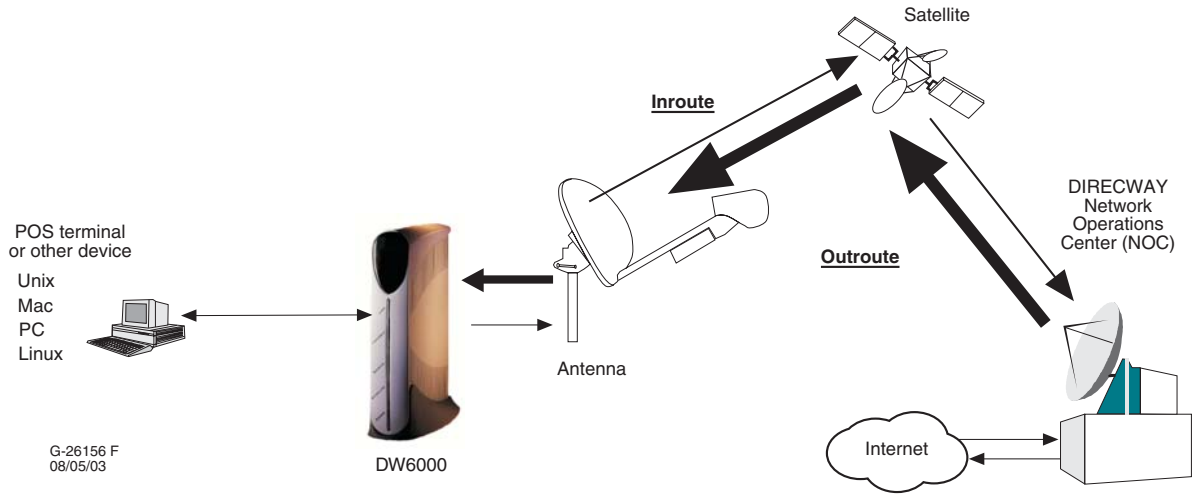


Figure 2: Remove site with DW6000 installed, single computer

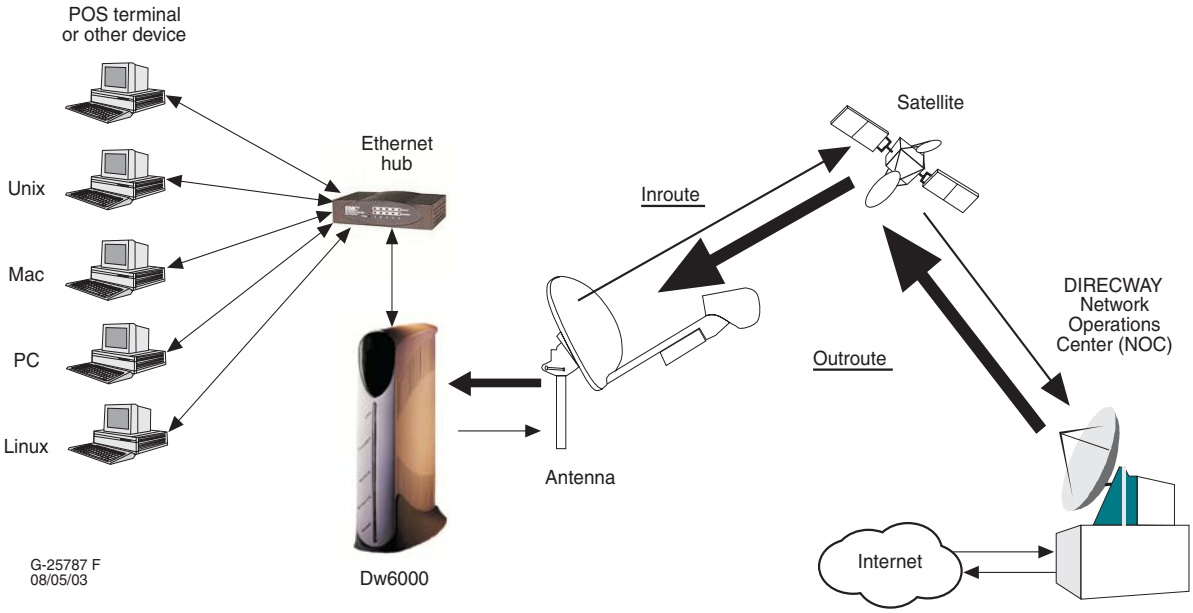


Figure 3: Remote site with DW6000 installed, wired (Ethernet) LAN

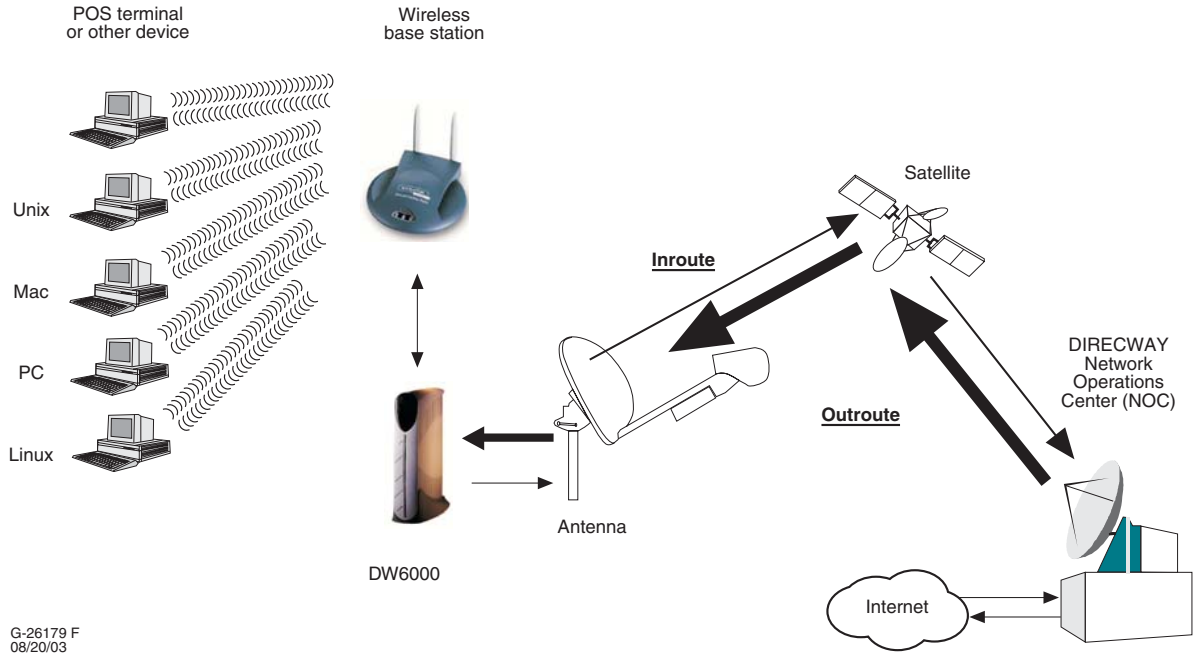


Figure 4: Remote site with DW6000 installed, wireless LAN

Specifications and identification of equipment

The part number label is located on the rear of the unit.

Table 1 lists the specifications of the DW6000.

Table 2 shows the cable requirements for the unit. The cable requirements are the same regardless of the type of antenna used and are determined by the distance from the DW6000 to the satellite antenna.

Table 1: DW6000 Specifications

Product Element	Specification
Weight	2.4 lb (1.089 kg)
Width	1.7 in (4.32 cm) 4.5 in (11.43 cm) with pedestal base
Height	9.5 in (24.13 cm) 9.75 in (24.77 cm) with pedestal base
Depth	10.5 in (26.67 cm)
Power supply	PN 1031105-0001 Rev A
Electrical requirements • Input line voltage • Input line frequency • Current required • Power consumption	 100 - 240 V - 2A max 50-60 HZ AC 100 W typical 64 W
Power cords	Detachable power cord for 110 VAC outlet type
Safe operating temperature range	0 to 40 degrees C (above 5000 feet altitude, reduce maximum temperature by 1 degree C per 1000 feet)
Safe operating humidity	5% to 95% non-condensing
Safe altitude	10,000 ft.
Cooling method	Convection
Ports	• One Ethernet LAN port supporting 10BaseT or 100BaseT operation, RJ45 switched • Telephone line port (DW6020 only)
Main processor	• 133 Mhz
Main memory	• 32MB
Flash memory	• 8MB
Protocol Support	TCP/IP protocol suite

These cable specifications are the minimum required. If the cable installation does not meet the minimum requirements, future applications may require that the entire cable installation be replaced with the minimum required cable.

Grounding and cable choice
The choice of grounding scheme may affect the choice of cable. Note that meeting the National Electrical Code grounding requirements is easier if you use RG-6 with solid copper center conductor and quad shield. However, you can also meet the requirements by using RG-6 with solid copper center conductor or copper clad steel conductor only and grounding the mast as described in the Overview.

Required cable specifications RG-6		
Cable length from satellite dish to computer	**Type of cable to be used**	
	Receive	Transmit
Up to 100 ft.	RG-6 with copper clad steel conductor (DC resistance of CommScope 5730 or less)	RG-6 with copper clad steel conductor (DC resistance of CommScope 5730 or less)
Up to 300 ft.	RG-6 with solid copper center conductor (CommScope 5729 or equivalent)	RG-6 with solid copper center conductor (CommScope 5729 or equivalent)
300 ft. to 420 ft.	RG-6 with solid copper center conductor and quad shield (CommScope 5781 or equivalent) (HNS PN 1029265-0001)	RG-6 with solid copper center conductor and quad shield (CommScope 5781 or equivalent) (HNS PN 1029265-0001)
Important: A higher grade of cable can be used for an installation where a lower grade is specified. For example, an RG-6 cable with solid copper center conductor and quad shield can be used for installations where the cable length is less than 300 ft. Never use a lower grade of cable than specified. Be sure to record the grade of the cable used for the installation. The grade is printed on the cable every few feet. Never use a cable which does not have the manufacturers name and its grade clearly printed on it!		

Required cable specifications RG-11		
Cable length from satellite dish to computer	**Type of cable to be used**	
	Receive	Transmit
Up to 270 ft.	RG-11 with copper clad steel conductor (CommScope 5916)	RG-11 with copper clad steel conductor (CommScope 5916)

Required cable specifications Heliax		
Cable length from satellite dish to computer	**Type of cable to be used**	
	Receive	Transmit
Up to 1370 ft.	1/2-inch Heliax cable (Andrew LDF4-75A or equivalent)	1/2-inch Heliax cable (Andrew LDF4-75A or equivalent)

CAUTION

Remember to:

- Install 360° weatherproofing for all connections.
- Install drip loops when needed.
- Install service loops when needed.

Note: Coaxial cables with copper clad steel center conductor must have the DC resistance of CommScope 5730 or less (32 ohms/1000 ft.). Also, the cable run cannot exceed 100 feet.

Note: Do not use splitters.

Note: Use plenum grade cable only if the cable is to be run in plenum space which is carrying return air for the air circulation system, or when local laws require it.

Chapter 2

Installing the indoor equipment

System pre-installation

Check to be sure both you and the customer have fulfilled all system and site requirements before beginning installation.

Installation PC requirements

The installer laptop PC must fulfill the following requirements.

- Ethernet enabled network interface card (NIC) and Ethernet cable
- Windows 98 SE, Windows Me, Windows 2000, or Windows XP with DHCP configured to automatically obtain IP addresses. Appendix D – *Configuring the installer laptop for IP addressing,* on page 121.
- Internet Explorer 5.5 or 6.0 and that the browser is not using any proxy settings.
- Customer PC qualification tool disk or CD.
- Dial-out modem if not using satellite-based commissioning (SBC).
- Installer software installed if not using SBC. See *Installing the DW6000 using SBC* on page 11.

Customer installation requirements

The customer must provide a computer with:

- Operating system
  - PC: Windows 98 SE, Windows Me, Windows 2000, Windows XP
  - MAC: 9.0 - 10.2 (excludes 10.0)
- Processor
  - PC: Pentium II 333 Mhz or faster
  - MAC: 300 Mhz or faster
- Memory
  - PC: 64MB RAM, Windows 98SE and Me; 128MB RAM Windows 2000 and XP.
  - MAC: 128MB
- Free hard drive space
  - PC: 100MB
  - MAC: 150MB

- A functioning 10/100 Ethernet interface installed on at least one computer. This is needed to ensure the customer can surf before you leave.
- A 6-foot Cat-5 Ethernet cable is supplied to connect the DW6000 and the customer's computer. If a longer cable is needed the customer must supply it. Either crossover or straight-through Cat-5 Ethernet cable can be used.
- A power strip or surge protector. If one of these is not present, proceed with the installation using the wall outlet or other power source.
- An analog phone line if not using SBC.

Note: If the customer wants to connect a network to the DW6000, he or she must do so via an Ethernet hub or other such equipment. The customer must supply and configure the hub and cables. IP address information is provided during commissioning.

DW6000 installation methods

There are two ways to install the DW6000.

- *Satellite-based commissioning* (SBC) is now the preferred method. In this new method, all commissioning is done over the satellite connection. No installer software is required. Assemble and install the system using the instructions below.
- If SBC is not available and an analog phone line is available, use the DIRECWAY installer software and your laptop to commission the system. See Appendix B – *Installing the indoor equipment using dial-up commissioning,* on page 69.

Note: Sometimes the unit must be configured via the Installer Console for various reasons. Only units installed for enterprise customers can be configured via the Installer Console. The installation specification will note when SBC or dial-up commissioning is not available. In those cases, follow the instructions in Appendix C – *Installing the DW6000 using Installer Console,* on page 95.

Summary of DW6000 installation process

The actual DW6000 installation is a 15-step process. Refer to the appropriate antenna installation manual for those steps involving antenna installation.

1. Qualify customer PC with qualification tool.
2. Conduct site survey.
3. Customer approves site survey.

4. Assemble indoor equipment. Assemble DW6000 and connect to laptop. Power up DW6000 and laptop and verify connectivity.
5. Compute pointing coordinates using the SBC interface installation software.
6. Assemble the antenna. Pre-set elevation and polarization values.
7. Mount the satellite antenna.
8. Run cables and ground the system. Clearly label the receive and transmit coaxial cables at the antenna, ground block, and indoor unit connectors.
9. Receive point the antenna using the SBC interface.
10. Auto cross pol the antenna. When the antenna is locked in place and continues to pass isolation, finish weather sealing the coaxial cable connections.
11. Register the DW6000 using SBC. ***Customer supplies SAN and password and clicks to agree to subscriber agreement.***
12. Verify DW6000 has finished downloading and connect customer's PC. Customer should use power strip or surge protector. Customer checks that TCP/IP settings are set to obtain an IP address automatically and restarts the computer.
13. Customer verifies connectivity by surfing to a Web site.
14. Record site ID and assigned IP address(es) for the customer on the Quick Start Guide. Clean up trash and verify connections are weather proofed. Optional: assist in customer computer configuration.
15. Complete FSO within 24 hours.

Five final installation check requirements

Before leaving confirm the following items:

- *Software Download Status* in the User Interface must show "All files are up-to-date."
- The installer has surfed using the user's computer to at least the myDIRECWAY site or another Internet site *after* the *Software Download Status* shows "All files are up-to-date."
- The customer's **System Information** page printed out and the site ID, Gateway ID, and subnet mask recorded on the Quick Start Guide.
- Help the customer create a browser shortcut to the System Control Center. If necessary rename the shortcut "System Control Center."
- Help the customer download the DW6000 User Guide from myDIRECWAY.com.

Antenna installation

The DW6000 can be used with the HNS DW4000 74cm Two-Way antenna. The DW6000 can also be used with .98, 1.2, and 1.8m antennas. Refer to the manufacturer's antenna installation manual for instructions on how to install the antenna. See the *About* section for a list of antenna installation manuals. Follow all safety procedures.

⚠ CAUTION

Professional installation and service of the antenna assembly is required by the Federal Communications Commission because the radio transmits radio frequency energy.

- **The two-way antenna assembly must be installed in a location or manner not readily accessible to children.**
- **The two-way antenna assembly must be installed at least 5 feet (1.5 meters) above ground level or any nearby surface on which a person could sit or stand.**

⚠ CAUTION

- **The two-way satellite dish assembly emits radio frequency energy when in the transmit mode.**
- **Unplug indoor power connection before performing maintenance or adding upgrades to any satellite dish components.**
- **To avoid risk of injury, do not place head or other body parts between feed horn and reflector when system is operational.**

Installing the DW6000 using SBC

You need all the items shown in Figure 5. Everything but the Ethernet cable is in the DW6000 installation kit or inside the antenna box.

You will also need the installation specification or work order. This is provided to you.

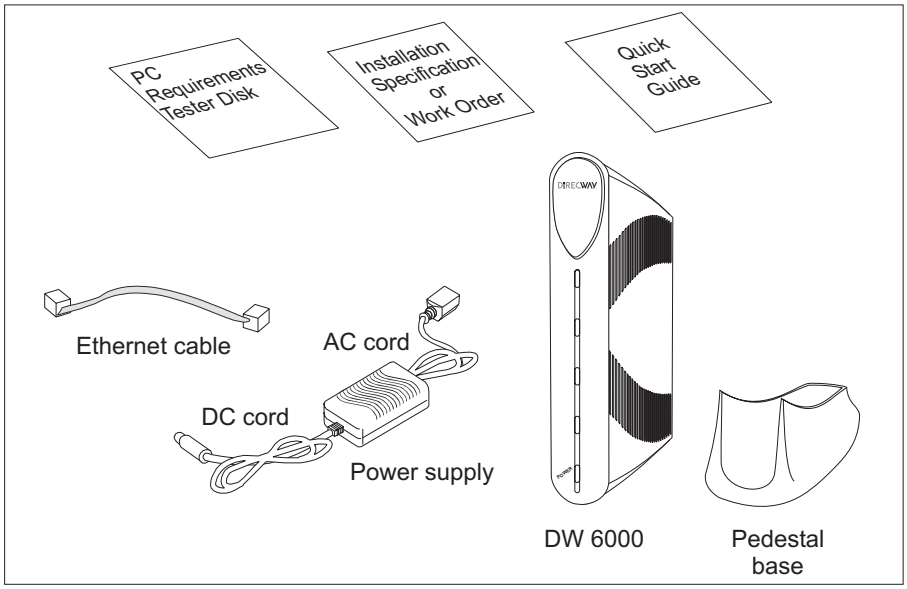


Figure 5: Items required for installation

Qualify customer computer with qualification tool

Insert the disk containing the customer PC qualification tool in the customer computer. Run all the checks in to tool to ensure the customer's computer is set up to work with the DW6000.

The tool does not function on a MacIntosh computer.

The power supply

The DW6000 uses a power supply with the part number P/N: 1031105-0001. The part number is on a sticker on the power supply. Verify that you are using the correct power supply. Do not use anything but the power supply supplied with the DW6000 system (1031105-0001).

Be sure the power supply is labeled **ADP 64AB B** in the upper right hand corner of the label, above the bar codes. See Figure 6.

CAUTION

- **This unit's performance may suffer if the wrong power supply is used.**
- **This unit must be used with the power supply PN 1031105-0001.**
- **When power needs to be removed from the receive modem, ALWAYS unplug the AC power cord from either the wall outlet, surge protector, or power strip.**
- **NEVER pull the power cord from the back of the DW6000. Doing so could damage the pins and also cause a short in the system.**
- **Power supply with the part number 1031105-0001 is to be used only in the United States and Canada.**
- **This unit must be used with 110-volt AC input.**
- **Other countries may have different standards and requirements.**

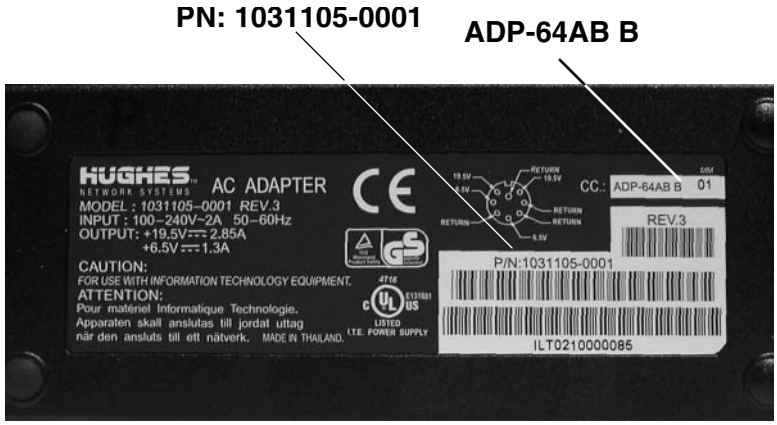


Figure 6: ADP-64AB B above bar code

SBC installation method

First assemble and install the satellite antenna. This includes attaching the coaxial cables to the DW6000 Satellite In and Satellite Out connectors. Remember to label the receive and transmit cables. Because the entire commissioning process will be done over the satellite, the receive and transmit cables must be connected from the satellite antenna to the DW6000.

Then follow the steps below and refer to the illustrations on page 14 through page 16 to install the DW6000. .

Note: Before beginning the installation, confirm that your laptop's TCP/IP settings are configured to "Obtain an IP address automatically." See Appendix D – on page 115

⚠ CAUTION

Do not connect the power supply to the DW6000, or connect the power supply to a power source, before instructed to do so.

CAUTION

- **Do not block any ventilation openings. Do not install near any heat sources such as radiators, heat registers, ovens, stoves, or other apparatus (including amplifiers) that produce heat.**
- **Recommended ventilation space around the top and sides of the DW6000 assembly should be approximately 6 inches. Ventilation is necessary to avoid overheating.**

Assemble DW6000 and attach to computer

1. Take the pedestal base in one hand and the DW6000 in the other. Orient them as shown in Figure 7. The Power LED will be at the bottom.
2. The pedestal base has two curved ridges, one on each side of its opening. See Figure 8. The DW6000 has six guides that slide along these ridges. See Figure 9. Locate the ridges and the two guides at the front of the pedestal base.
3. Align the guides with the ridges.
4. Gently slide the guides along the ridges until the DW6000 clicks into place.

Note: If you need to remove the DW6000 from the pedestal base, pull up and back on the tab on the back of the base. See Figure 10. You can then slide the base off the DW6000.

Figure 7: Orienting pedestal base and DW6000

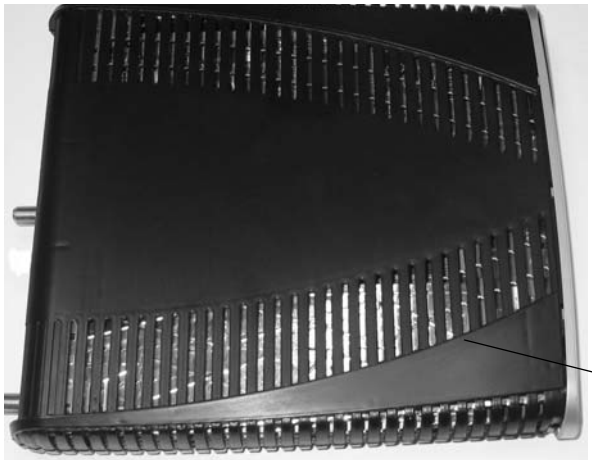


Figure 8: DW6000 guides

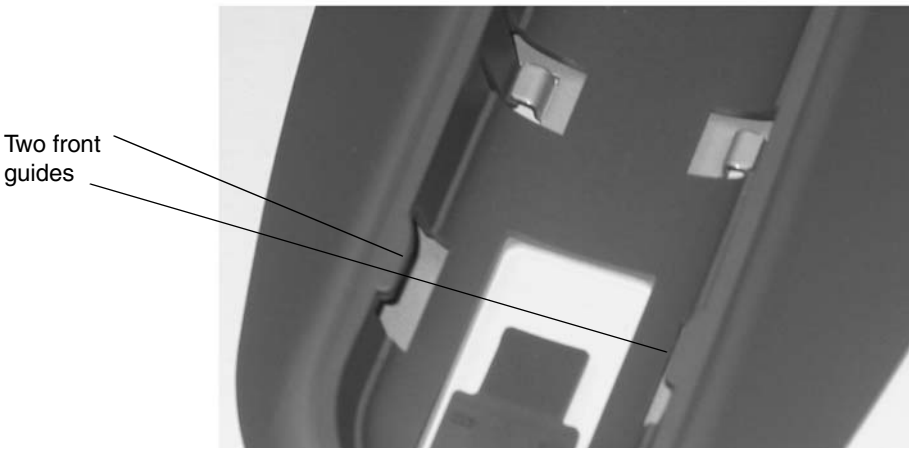


Figure 9: Two front guides

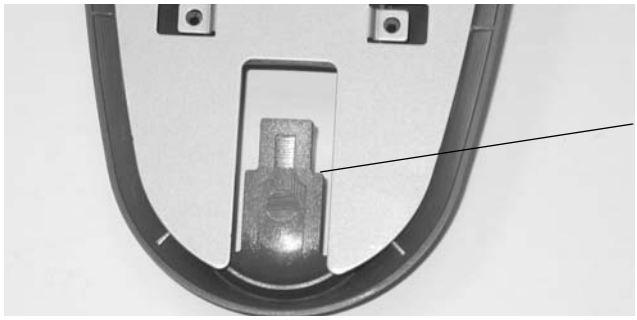


Figure 10: Pedestal base clip

5. Connect the component interconnection cables. See Figure 11 for final cabling. An Ethernet cable connects the DW6000 and the installer PC. A power supply adapter cable attaches to the DC IN port. Two coaxial cables lead to the satellite antenna.

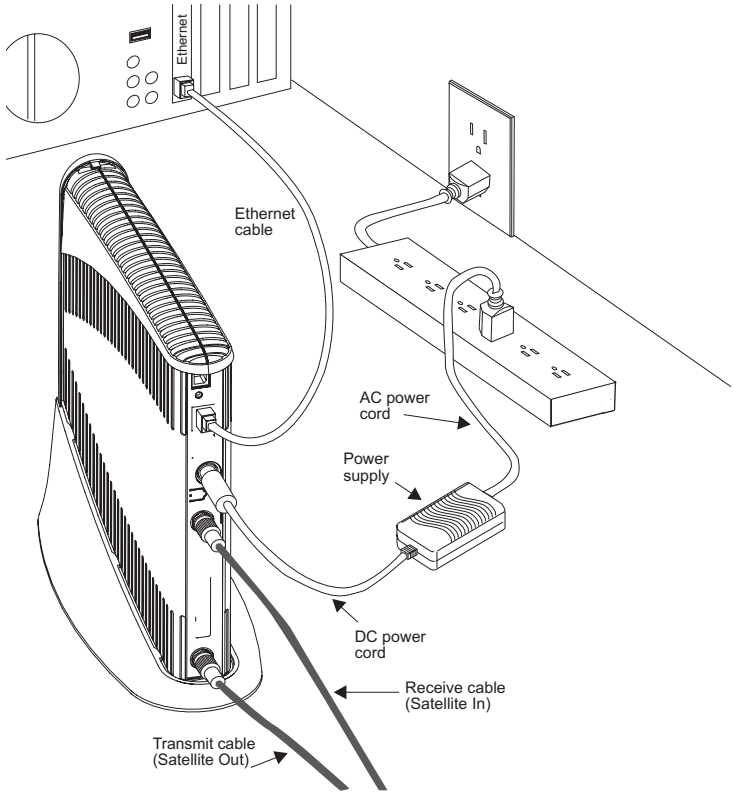


Figure 11: Final configuration

6. Connect the power supply AC cord to the power strip or surge protector. Ensure it is tightly connected to the power supply.

Power up and read the DW6000 LED display

After you connect the cables to the DW6000, connect the power strip or surge protector to a 110 V wall outlet or other power source. The DW6000 LEDs will come on in the following order:

1. Power LED comes on solid to indicate the DW6000 is powered up.
2. LAN LED comes on within 30 seconds to indicate LAN connectivity is detected.
3. Power LED starts blinking to indicate that the unit is not commissioned and therefore is running fallback.bin and not main.bin.

Note: In countries outside North America, the DW6000 may be plugged, with a physical adapter, directly into a 220 V outlet. Different countries may have different standards and requirements.

Note: Whenever the LEDs do not function properly as described above, check to be sure you have the correct power supply, PN 1031105-0001.

Obtain IP address and test Ethernet connection

1. Restart the PC so it obtains an IP address from the DW6000. Or use the command **`ipconfig /renew`** from a DOS command line prompt.
2. The embedded DHCP server assigns IP address = 192.168.0.2 to the PC. The default Gateway address is set to 192.168.0.1. Figure 12 shows a sample Windows TCP/IP Properties screen. (These may vary among different Windows operating systems.)

Make sure the installer PC can communicate with the DW6000 over the Ethernet connection. Enter **`Ping <192.168.0.1>`** at a DOS prompt. Figure 13 shows a successful attempt; Figure 14 shows an unsuccessful attempt. **If the PC fails to ping the DW6000**, there are issues with either the PC's NIC or TCP/IP configuration.

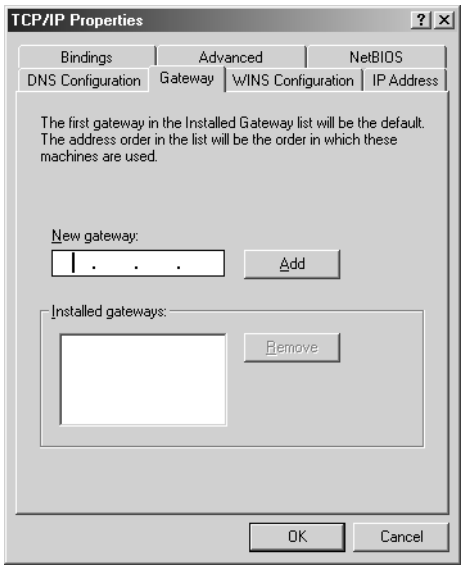


Figure 12:

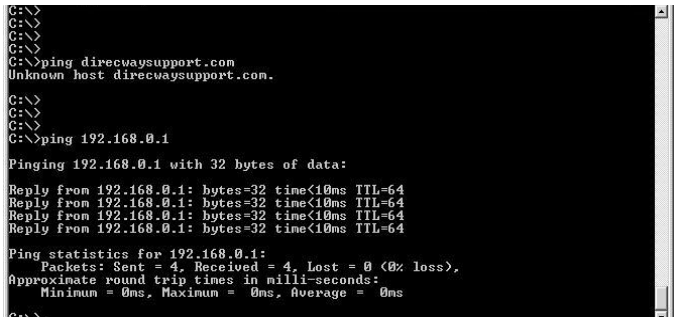

C:\>
C:\>
C:\>
C:\>
C:\>ping direcwaysupport.com
Unknown host direcwaysupport.com.
C:\>
C:\>
C:\>
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Figure 13: Successful ping

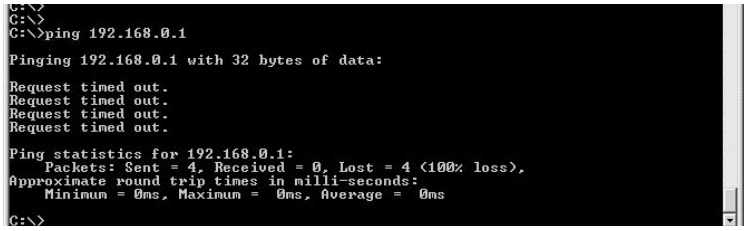

C:\>
C:\>
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>

Figure 14: Failed ping

The commissioning procedure

You must confirm remote location and transponder information before pointing the antenna. You will point the antenna, achieve maximum signal quality factor (SQF), and then cross pol the antenna. Refer to the antenna installation guide for any instructions on peaking signals.

1. Open a browser on the installer laptop.
2. Type **`http://198.162.0.1/fs/advanced/advanced.html`** in the address bar and press Enter. The Advanced screen appears.
3. Click Setup. The Setup screen appears. See Figure 15.
4. Select Registration - Installer. The Antenna Location screen appears. See Figure 16.
5. Enter the ZIP code of the location where you are installing the DW6000 and select Next. The *Antenna Location* screen appears. See Figure 16. If you wish to enter the site's latitude and longitude manually select Enter location manually and click next. See Figure 20. Appendix A – *Lat/Long Decimals to Minutes Table,* on page 67 shows how to determine latitude and longitude decimal to minutes conversion.
6. The *Verification of Antenna Location* screen appears. See Figure 17. Verify the information is correct and select Next The *Satellite Parameters* screen appears. See Figure 18.

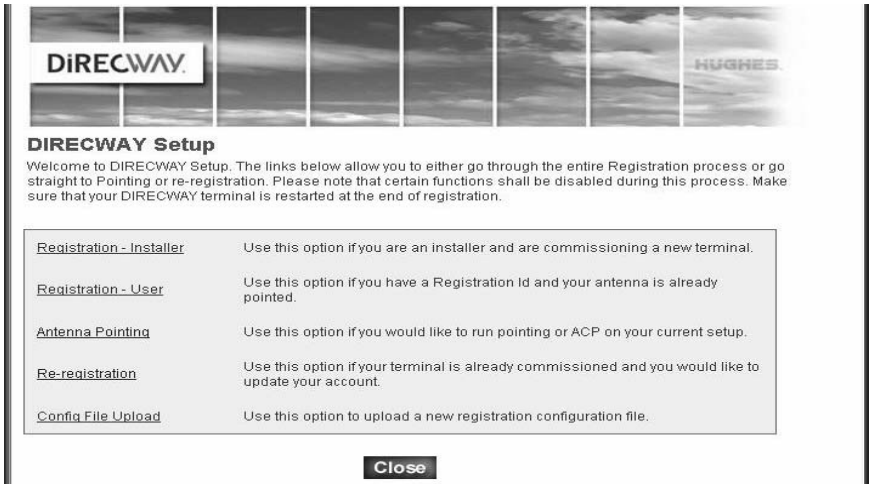

DIRECWAY
HUGHES
DIRECWAY Setup
Welcome to DIRECWAY Setup. The links below allow you to either go through the entire Registration process or go straight to Pointing or re-registration. Please note that certain functions shall be disabled during this process. Make sure that your DIRECWAY terminal is restarted at the end of registration.
Registration - Installer
Use this option if you are an installer and are commissioning a new terminal.
Registration - User
Use this option if you have a Registration Id and your antenna is already pointed.
Antenna Pointing
Use this option if you would like to run pointing or ACP on your current setup.
Re-registration
Use this option if your terminal is already commissioned and you would like to update your account.
Config File Upload
Use this option to upload a new registration configuration file.
Close

Figure 15: Initial registration screen

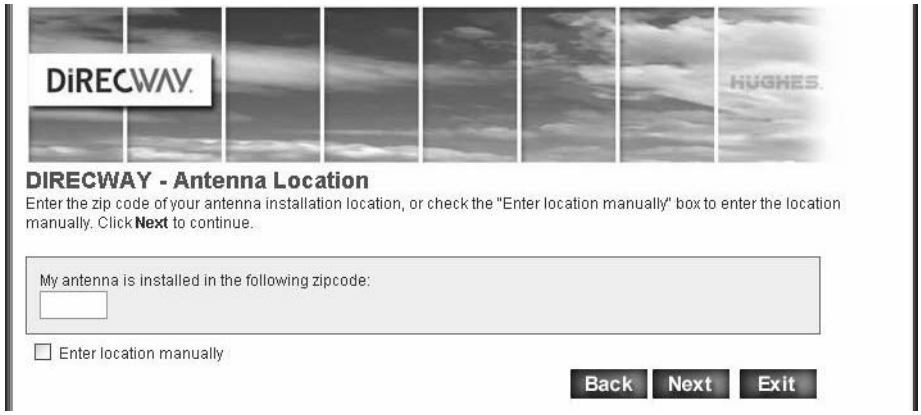

DIRECWAY
HUGHES
DIRECWAY - Antenna Location
Enter the zip code of your antenna installation location, or check the "Enter location manually" box to enter the location manually. Click Next to continue.
My antenna is installed in the following zipcode:
Enter location manually
Back
Next
Exit

Figure 16: Antenna Location

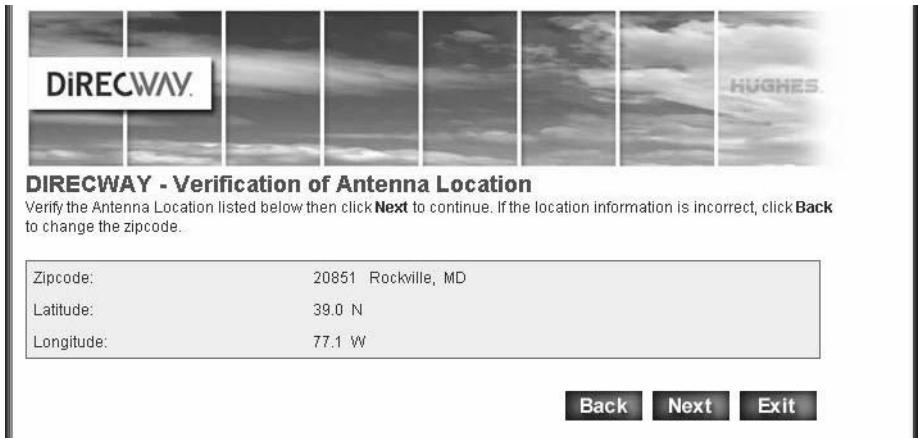

DIRECWAY
HUGHES
DIRECWAY - Verification of Antenna Location
Verify the Antenna Location listed below then click Next to continue. If the location information is incorrect, click Back to change the zipcode.
Zipcode: 20851 Rockville, MD
Latitude: 39.0 N
Longitude: 77.1 W
Back
Next
Exit

Figure 17: Verify antenna location

7. Select a satellite/transponder combination that corresponds with the work order or the current transponder assignment from the drop down list and select Next. A *Verification* screen appears. See Figure 19. If you are using OPI to point the antenna you must check the Enable OPI Display box at the bottom of the screen.
   If you wish, you can enter the location manually. Enter location manually in Figure 18 must be checked. When you select Next the Transponder - Manual Entry screen appears. See Figure 20. Enter the longitude, frequency, and symbol rate, and select the polarization. Then select Next and the verification screen appears.

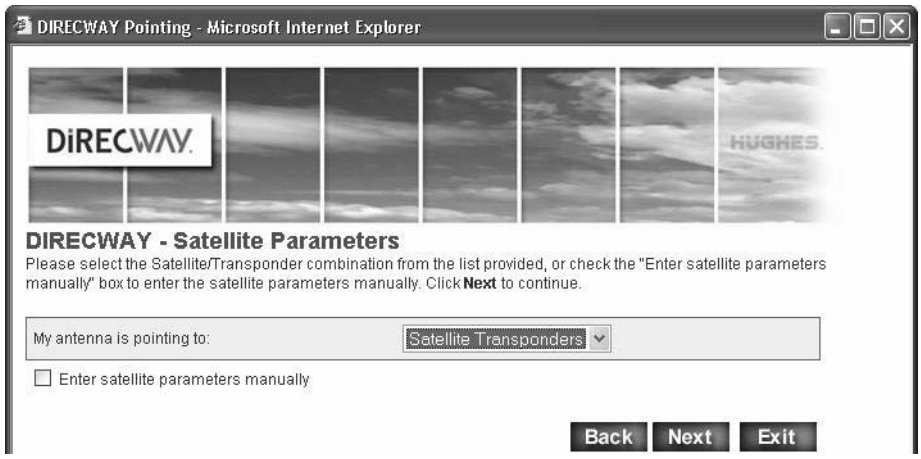

DIRECWAY Pointing - Microsoft Internet Explorer
DIRECWAY
HUGHES
DIRECWAY - Satellite Parameters
Please select the Satellite/Transponder combination from the list provided, or check the "Enter satellite parameters manually" box to enter the satellite parameters manually. Click Next to continue.
My antenna is pointing to:
Satellite Transponders
Enter satellite parameters manually
Back
Next
Exit

Figure 18: Choose transponder

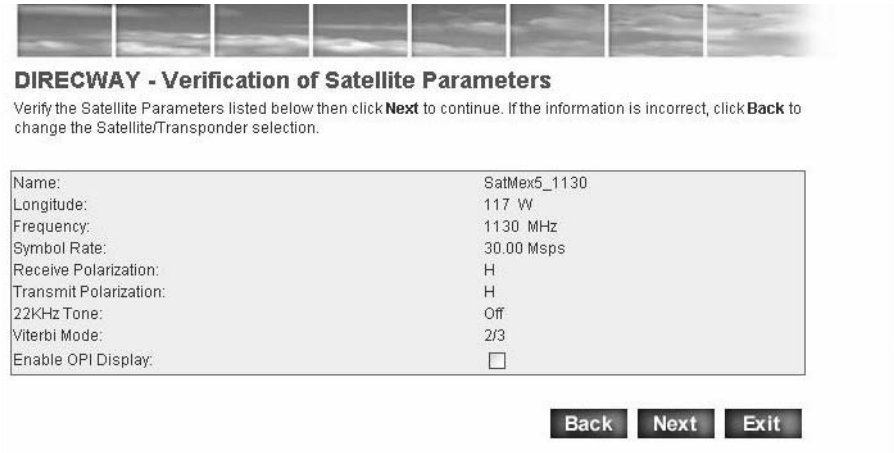

DIRECWAY - Verification of Satellite Parameters
Verify the Satellite Parameters listed below then click Next to continue. If the information is incorrect, click Back to change the Satellite/Transponder selection.
Name: SatMex5_1130
Longitude: 117 W
Frequency: 1130 MHz
Symbol Rate: 30.00 Msps
Receive Polarization: H
Transmit Polarization: H
22KHz Tone: Off
Viterbi Mode: 2/3
Enable OPI Display:
Back
Next
Exit

Figure 19: Transponder - Verification

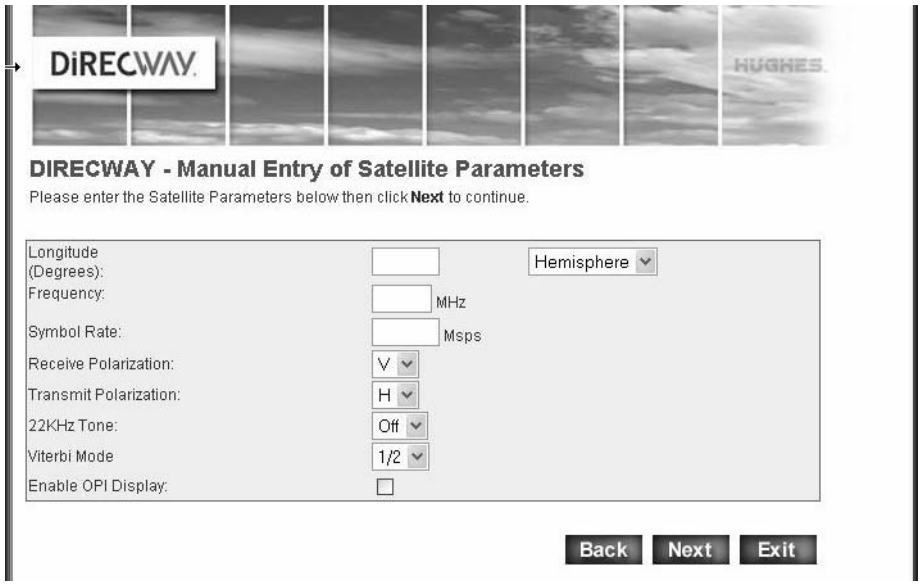


Figure 20: Manual entry of parameters

8. Verify the information and select Next. The Receive Antenna Pointing screen appears. See Figure 21.

   Click on Display Signal Strength to see the signal quality factor (SQF). When the signal is locked, a checkmark appears in the Perform ACP checkbox. Peak the receive pointing as instructed in the antenna installation manual. Click Close. See Figure 22.

   Remember that the signal may be locked but not necessarily peaked. That is why you must carry out the instruction to peak the signal.

Note: The Signal Quality window may not appear on top. Just minimize the other windows until you can see it.

9. Click Next. The *Transmit Antenna Pointing* screen appears. See Figure 23.

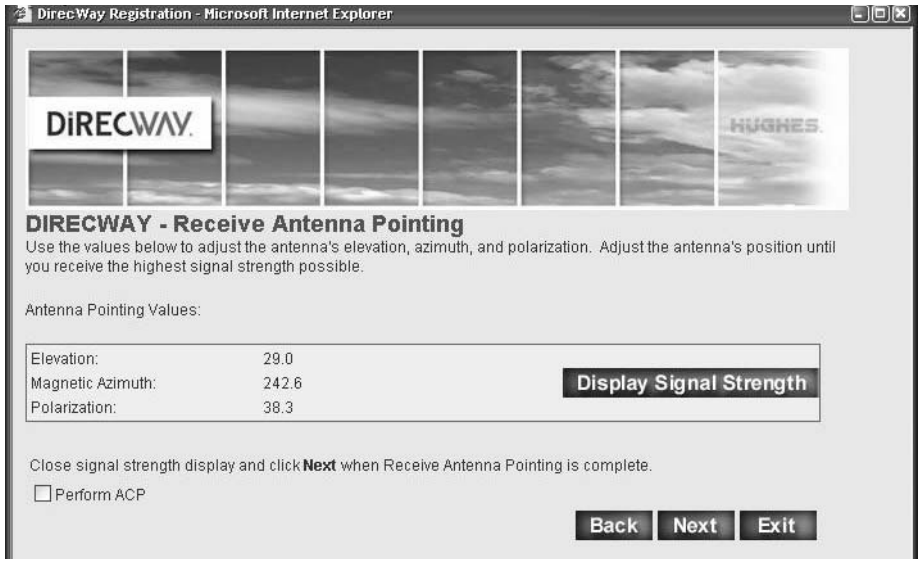

DirecWay Registration - Microsoft Internet Explorer
DIRECWAY
HUGHES
DIRECWAY - Receive Antenna Pointing
Use the values below to adjust the antenna's elevation, azimuth, and polarization. Adjust the antenna's position until you receive the highest signal strength possible.
Antenna Pointing Values:
Elevation: 29.0
Magnetic Azimuth: 242.6
Polarization: 38.3
Display Signal Strength
Close signal strength display and click Next when Receive Antenna Pointing is complete.
Perform ACP
Back
Next
Exit

Figure 21: Receive Pointing

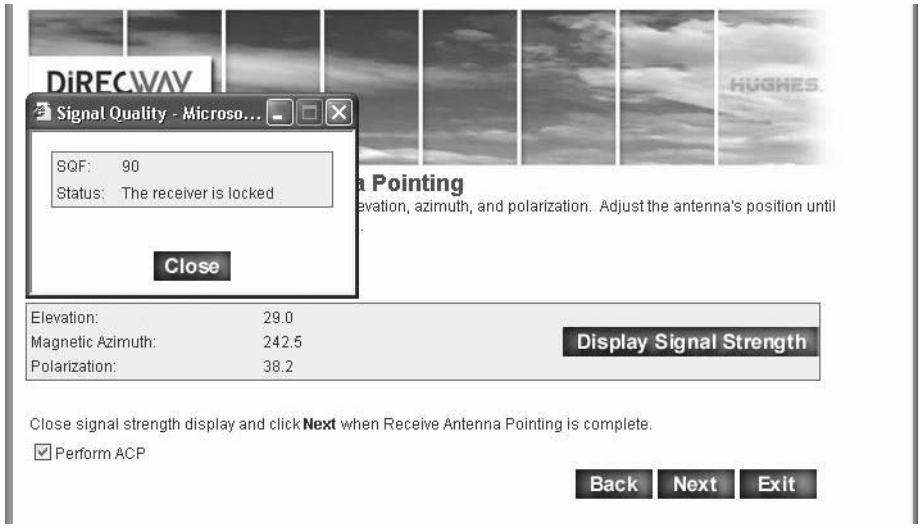


Figure 22: Receive pointing results

10. Click on Manual. A window appears showing the status of the test, the isolation value, and the pass/fail result. Adjust the antenna to achieve maximum transmit isolation. When the unit consistently passes the manual cross-pol test as shown in Figure 24, bolt down the antenna.
11. Click the Automatic cross pol button. If the unit passes the automatic cross pol click Next. If it does not, repeak the transmit isolation in manual mode. The Registration Server Selection screen appears. See Figure 25.

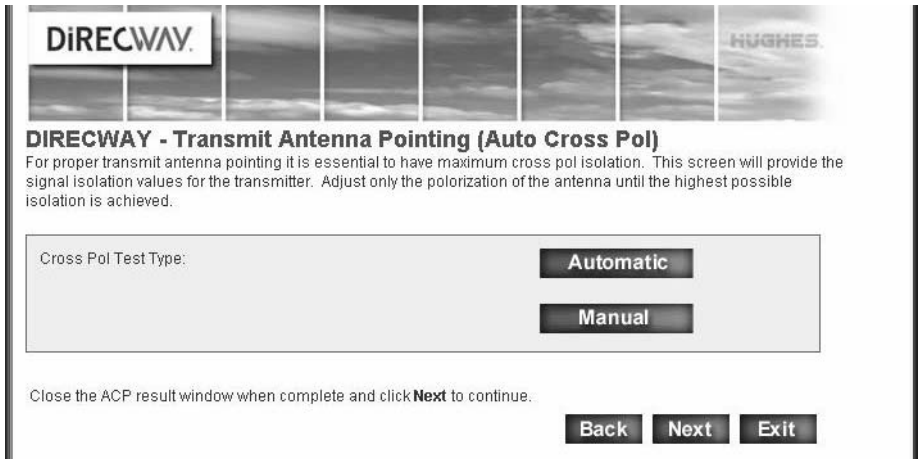

DiRECWAY
HUGHES
DIRECWAY - Transmit Antenna Pointing (Auto Cross Pol)
For proper transmit antenna pointing it is essential to have maximum cross pol isolation. This screen will provide the signal isolation values for the transmitter. Adjust only the polorization of the antenna until the highest possible isolation is achieved.
Cross Pol Test Type:
Automatic
Manual
Close the ACP result window when complete and click Next to continue.
Back
Next
Exit

Figure 23: Cross Pol

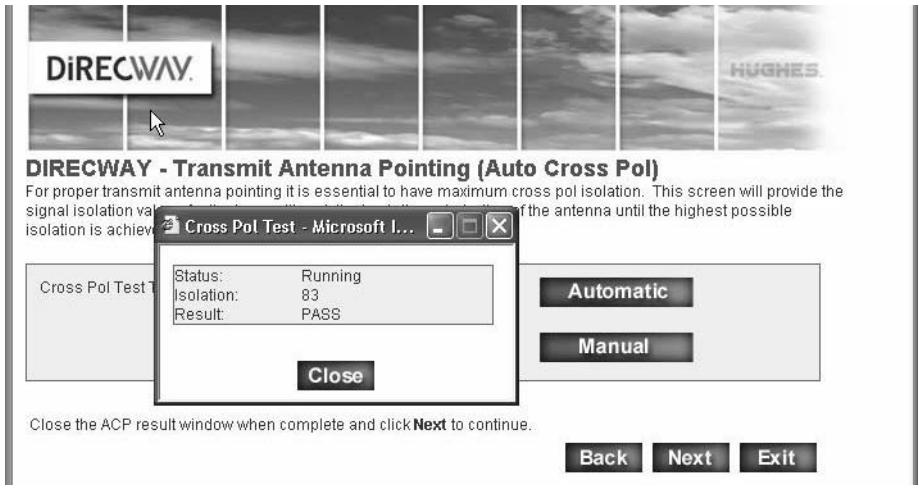

DIRECWAY
HUGHES
DIRECWAY - Transmit Antenna Pointing (Auto Cross Pol)
For proper transmit antenna pointing it is essential to have maximum cross pol isolation. This screen will provide the
signal isolation va
isolation is achiev
f the antenna until the highest possible
Cross Pol Test T
Cross Pol Test - Microsoft I...
Status: Running
Isolation: 83
Result: PASS
Close
Automatic
Manual
Close the ACP result window when complete and click Next to continue.
Back
Next
Exit

Figure 24: Auto Cross Pol

12. Select a registration server from the drop-down list. If you are unsure which server to use, refer to the installation specification or work order. Click Next. The *Registration In Progress* screen appears. See Figure 26.

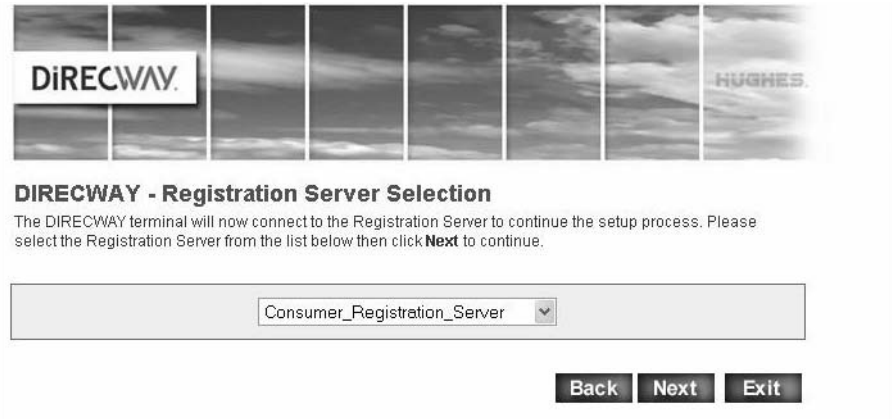

DIRECWAY
HUGHES
DIRECWAY - Registration Server Selection
The DIRECWAY terminal will now connect to the Registration Server to continue the setup process. Please select the Registration Server from the list below then click Next to continue.
Consumer_Registration_Server
Back
Next
Exit

Figure 25: Registration server selection

Figure 26: Registration in Progress

13. Click Next. A screen appears reminding you you will be redirected to a secure connection. See Figure 27. Click OK.
14. A number of screens appear. The number of screens that appear depends on the type of commissioning. The screens may include a subscriber agreement screen, a serial account number (SAN) screen (see Figure 28), and User Information screen. ***The customer fills out the SAN and PIN and clicks through the subscriber agreement.***
15. When registration is complete, click Next. An e-mail account registration screen appears. See Figure 29.
16. You can click through this screen also. A *Registration* screen appears. See Figure 30.
17. Click Continue. A *Registration Complete* screen appears. See Figure 31.
18. Click on Restart. A Terminal Reset window appears. See Figure 32
19. Click on Close. The DW6000 will reset. The unit is now commissioned.

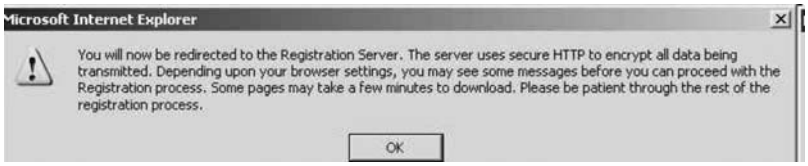

Microsoft Internet Explorer
You will now be redirected to the Registration Server. The server uses secure HTTP to encrypt all data being transmitted. Depending upon your browser settings, you may see some messages before you can proceed with the Registration process. Some pages may take a few minutes to download. Please be patient through the rest of the registration process.
OK

Figure 27: Secure connection

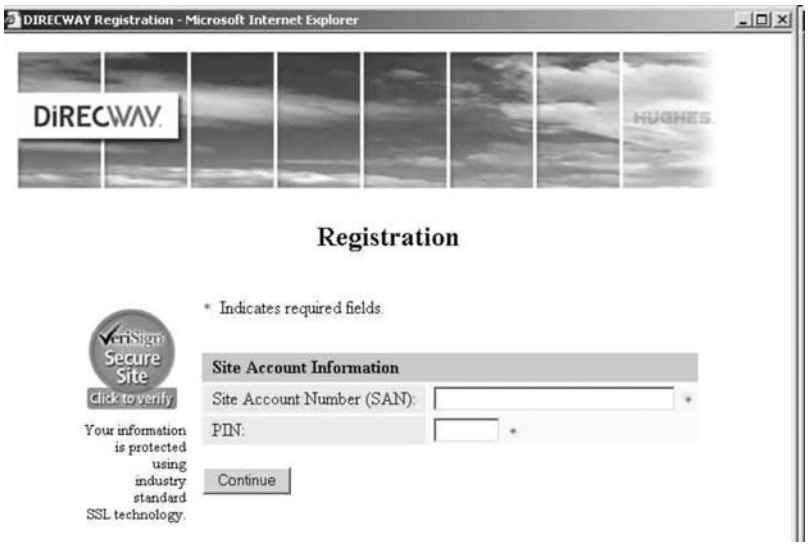


Figure 28: Enter SAN and PIN

DIRECWAY
HUGHES
Registration
E-Mail Accounts
Number of E-Mail accounts you can create is limited to 5.
After you are done, please press the Continue button.
* Indicates required fields.
New E-Mail Account Info
Your desired username: *
Your username should be between 3 and 32 characters long.
You may use lowercase letters, digits, dashes, dots, or underscores
in your username, but no spaces or other symbols.
The first character of your username cannot be a dash or a dot.
Your desired password: *
Your password should be between 6 and 32 characters long.

Figure 29: E-mail account registration

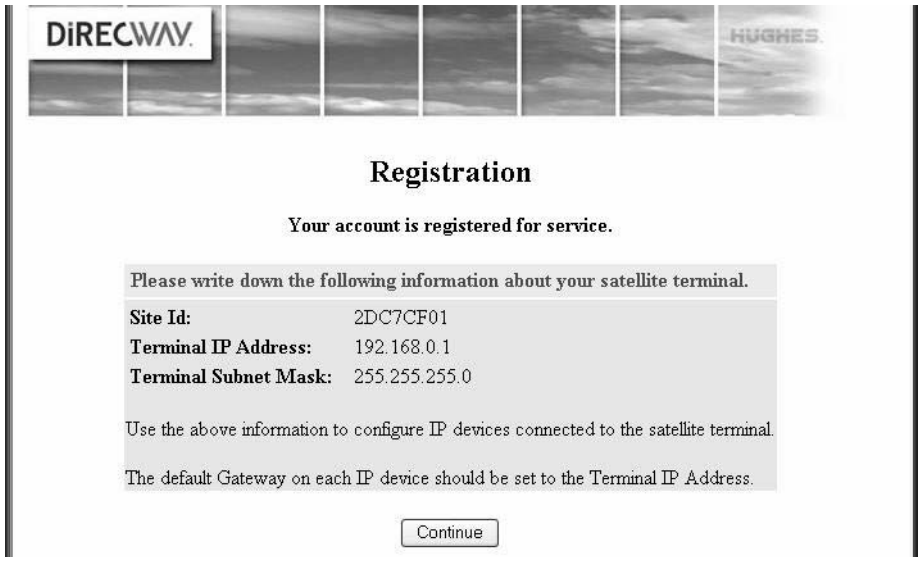

DIRECWAY
HUGHES
Registration
Your account is registered for service.
Please write down the following information about your satellite terminal.
Site Id: 2DC7CF01
Terminal IP Address: 192.168.0.1
Terminal Subnet Mask: 255.255.255.0
Use the above information to configure IP devices connected to the satellite terminal.
The default Gateway on each IP device should be set to the Terminal IP Address.
Continue

Figure 30: Registration information; **record this information on Quick Start Guide**

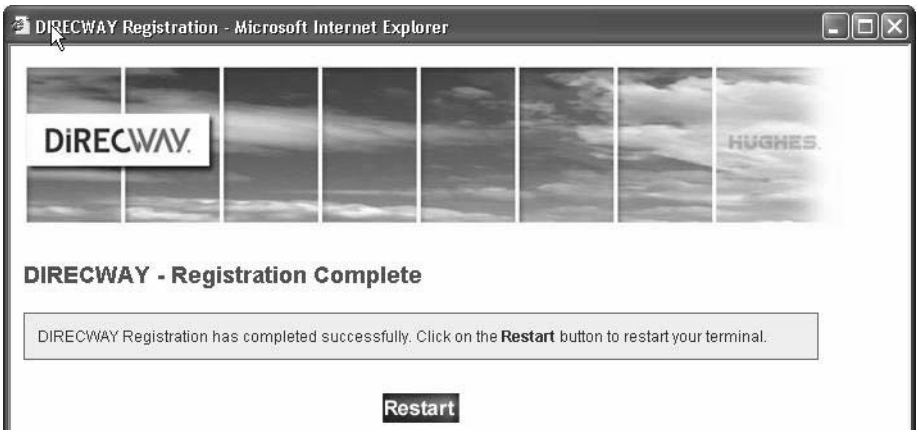

DIRECWAY Registration - Microsoft Internet Explorer
DIRECWAY
HUGHES
DIRECWAY - Registration Complete
DIRECWAY Registration has completed successfully. Click on the Restart button to restart your terminal.
Restart

Figure 31: Registration complete - restart

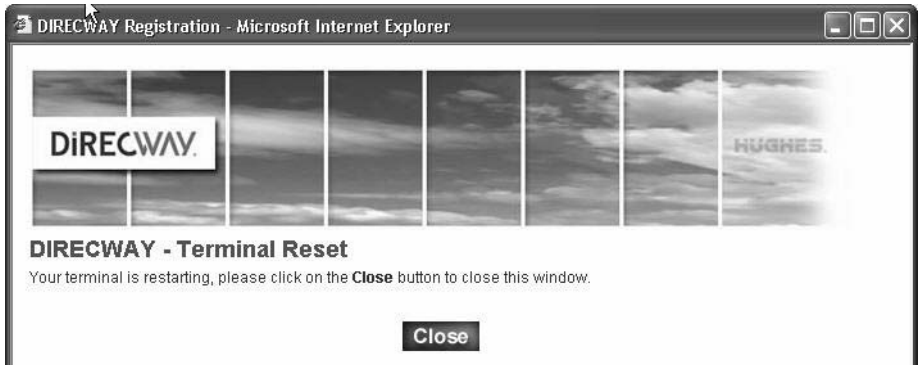

DIRECWAY Registration - Microsoft Internet Explorer
DIRECWAY
HUGHES
DIRECWAY - Terminal Reset
Your terminal is restarting, please click on the Close button to close this window.
Close

Figure 32: Close for terminal reset

Final installation check requirements

- Confirm that *Software Download Status* in the User Interface **System Status** screen shows "All files are up-to-date."
- Connect the customer computer to the DW6000 and confirm the customer can surf to at least the myDIRECWAY.com site or another Internet site *after* the *Software Download Status* shows "All files are up-to-date."
- Help the customer download the DW6000 User Guide from myDIRECWAY.com. The customer must register with myDIRECWAY.com to download the User Guide.
- Confirm the user's **System Information** page has been printed out and the site ID, Gateway IP address, and subnet mask recorded in the Quick Start Guide.
- Help the customer create a browser shortcut to the System Control Center. If necessary rename the shortcut "System Control Center."

Confirm all files up-to-date

1. Type **`www.direcwaysupport.com`** (or 192.168.0.1) in the location bar and press **ENTER**. The **Control Center** appears. I
2. Click on the *System Status* button. The **System Status** screen appears. See Figure 34.
3. Check the Software Download Status line message. If it reads "All files are up-to-date" the unit has been commissioned.

   If "All files up-to-date" does not appear, wait a few minutes. If the message still does not appear, power cycle the unit by unplugging it from the power source and plugging it back in and wait 15 minutes. If the message still does not appear, contact installer support,

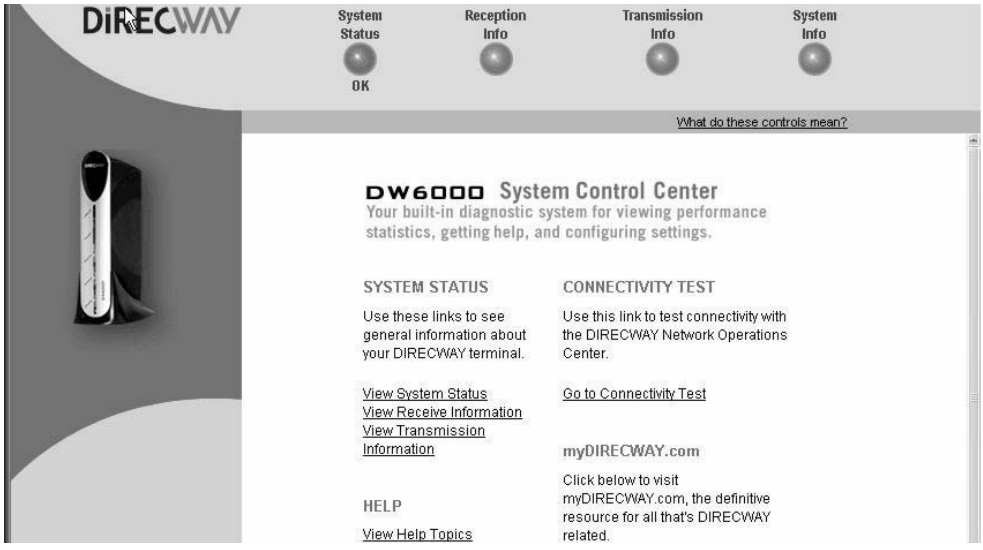

DIRECWAY
System Status
OK
Reception Info
Transmission Info
System Info
What do these controls mean?
DW6000 System Control Center
Your built-in diagnostic system for viewing performance statistics, getting help, and configuring settings.
SYSTEM STATUS
Use these links to see general information about your DIRECWAY terminal.
View System Status
View Receive Information
View Transmission Information
HELP
View Help Topics
CONNECTIVITY TEST
Use this link to test connectivity with the DIRECWAY Network Operations Center.
Go to Connectivity Test
myDIRECWAY.com
Click below to visit myDIRECWAY.com, the definitive resource for all that's DIRECWAY related.

Figure 33: System Status

Figure 34: System Status screen

Connect to customer computer, and surf to myDIRECWAY.com,

Connect the customer's computer and the DW6000 with Ethernet cable. See Figure 35. Make sure the customer can surf to the myDIRECWAY.com Web site. If the customer cannot surf, see the instructions below.

If the customer cannot surf Configure the installer laptop so its network properties match those of the customer's PC. Refer to *Appendix D* for detailed instructions for setting network properties. Then:

1. Connect the installer laptop and DW6000 with Ethernet cable.
2. Start a Web browser on the installer laptop.
3. Enter the DW6000 IP address or 192.168.0.1 or www.direcwaysupport.com in the browser URL location bar and press Enter. If the DW6000 is functioning, the System Control Center appears.
4. Enter myDIRECWAY.com or some other known site in the browser URL location bar and press Enter. If the site appears, the DW6000 is functioning. The problem probably exists on the customer's computer. The customer's network properties may not be configured properly, or there may be some other system problem. The customer should consult the contact information from the System Control Center Help pages to get technical support.

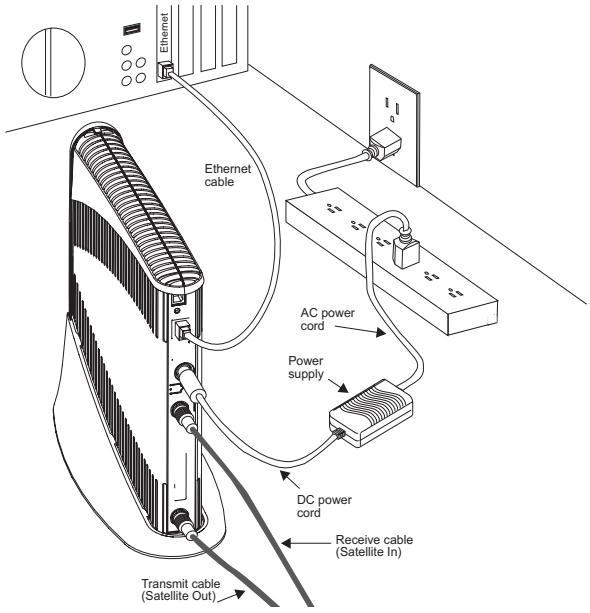


Figure 35: Final configuration

Download DW6000 User Guide

Help the customer download the ***DW6000 User Guide*** (HNS 1033294-0001).

The customer must first follow the steps below to register with myDIRECWAY.com before he or she can navigate to the User Guide and download it.

1. Browse to **`www.mydirecway.com`**. The Welcome screen appears. See Figure 36.
2. Click the Please Join button. The screen in Figure 37 appears.
3. Accept the Java applet download. The Registration screen appears. See Figure 38.
4. Fill out the Registration form. Click Preview. A screen appears asking you to confirm the information. See Figure 39.
5. Check the information and click Submit. If all information is correct the myDIRECWAY.com home screen appears. See Figure 40. If all information is correct by the system will not register you, try another username.

MY DIRECWAY - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.mydirecway.com/
DIRECWAY.
Broadband that's out of this world.
HUGHES.
Welcome to
myDIRECWAY.com
This website is full of tools and resources that will help you get the most out of your DIRECWAY service.
If this is your first time here,
PLEASE JOIN
If you are already a member,
PLEASE LOGIN

Figure 36: Welcome screen

Figure 37: Download Java applet

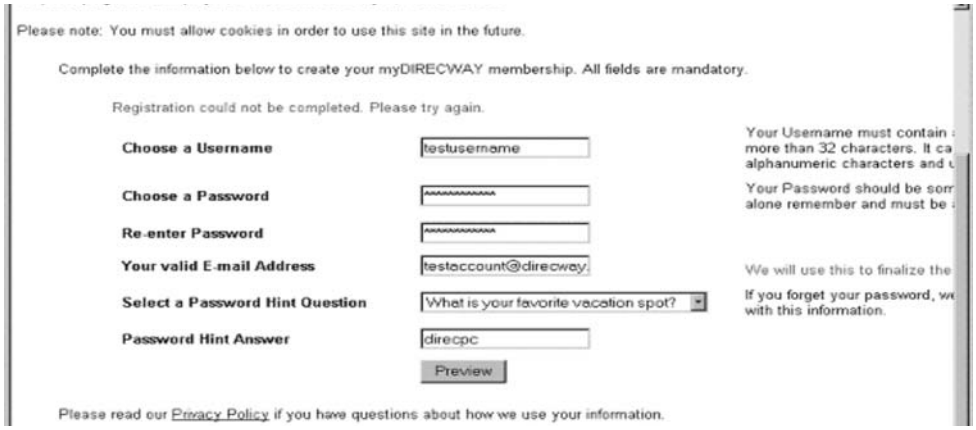

Please note: You must allow cookies in order to use this site in the future.
Complete the information below to create your myDIRECWAY membership. All fields are mandatory.
Registration could not be completed. Please try again.
Choose a Username
testusername
Your Username must contain
more than 32 characters. It ca
alphanumeric characters and
Choose a Password
Your Password should be sor
alone remember and must be
Re-enter Password
Your valid E-mail Address
testaccount@direcway.
We will use this to finalize the
Select a Password Hint Question
What is your favorite vacation spot?
If you forget your password, w
with this information.
Password Hint Answer
direcpc
Preview
Please read our Privacy Policy if you have questions about how we use your information.

Figure 38: Registration form

DiRECWAY.
Broadband that's out of this world.
HUGHES.
NETWORK SYSTEMS
User Registration
Please take a moment to verify that the information you entered is correct and free of typos.
This information will be used to create your myDIRECWAY membership. For security purposes, you
will receive an email at the address listed below to activate your myDIRECWAY membership.
Username
testusername
Password
testpassword
E-mail Address
testaccount@direcway.com
Password Hint Question
What is your favorite vacation spot?
Password Hint Answer
direcpc
<< Go Back
Submit

Figure 39: Submit

Figure 40: myDIRECWAY.com home

Print the customer's System Information page and record information

1. Have the customer access the System Control Center by typing **`www.direcwaysupport.com`** in a Web browser location bar and pressing **ENTER**. The System Control Center in Figure 33 appears.
2. Click on *System Info*. The **System Information** screen appears. See Figure 41.
3. Have the customer print the screen. If they don't have a printer then can use **Alt/Print Scrn** to capture it and paste it into a word processing, Microsoft Paint, or similar file and save that.
4. If you have not already done so, record the Site ID, Gateway address, and subnet mask on the Quick Start Guide.

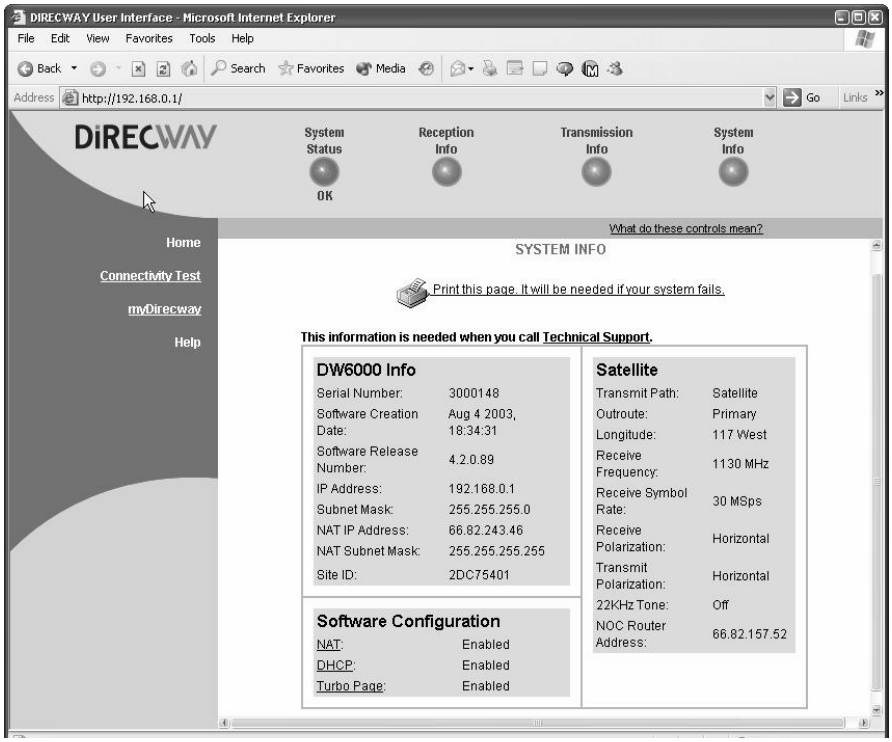


Figure 41: System Information

Create System Control Center icon

1. Enter **www.direcwaysupport.com** in the browser URL location bar to open the System Control Center. See Figure 42.
2. Left click on the browser icon in the upper left-hand corner of the Control Center and drag it to the desktop.
3. When you let go of the mouse button a DW6000 System Control Center icon appears. You may need to rename the icon.

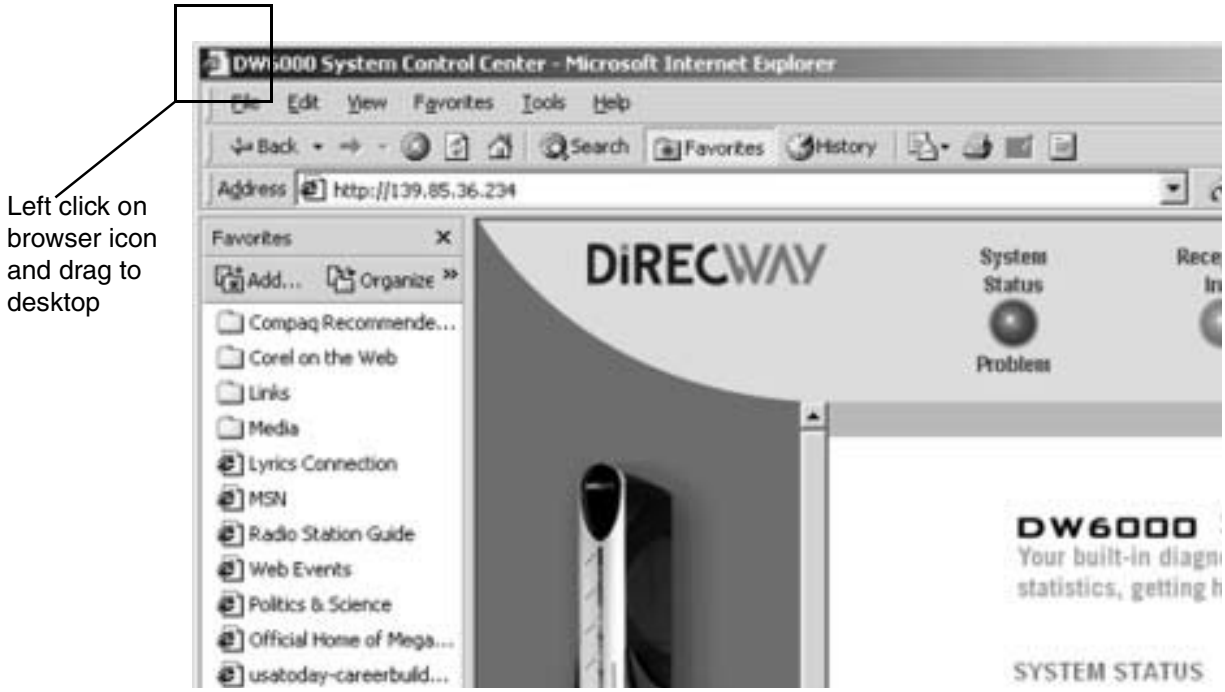


Figure 42: Click and drag to create System Control Center desktop icon

Chapter 3

The System Control Center

The DW6000 has an internal Web server that supports the System Control Center. The System Control Center provides information about system status, system configuration, and online documentation. Access it if the DW6000 doesn't seem to be functioning properly, to find system information for configuring networks, or to check system performance.

Note: Each DW6000's software is updated periodically via satellite link. Always refer to System Control Center Help and the latest version of this manual for the latest information about the System Control Center and DW6000 software.

If at any time you are unable to access the System Control Center, take the steps below. See Chapter 4 – *DW6000 LEDs and troubleshooting,* on page 57 for more information.

- Make sure the DW6000 is powered up. The Power and LAN LEDs should be lit solid. (The LAN LED may blink if there is LAN port activity.) If they are not, power cycle the DW6000 by unplugging the power cord from the wall outlet or surge protector, waiting 10 seconds, and plugging it back in.
- If the System Control Center is still not accessible, check the Ethernet cable connection from the computer to the DW6000. Check that the power adapter is securely attached to the receive and DW6000. Also check the computer's network configuration.
- If the System Control Center is still not available, try pinging the unit by entering **`ping 192.168.0.1`** at a DOS command line. If the ping results show `request timed out` power cycle the unit.
- If the ping results show `Reply but from...`, check the browser settings. Make sure the browser is not using any proxy settings.
- If the System Control Center is still not available, contact installer support.

How to access the System Control Center

The System Control Center is accessed through any browser, such as Internet Explorer or Netscape. Follow the steps below to set up an entry for the System Control Center in a browser. The steps are written for Internet Explorer or Netscape, but you can use a similar procedure for any browser.

1. Go to *Start→Programs→Internet Explorer* (or Netscape). The browser interface appears.
2. Place the cursor in the Internet Explorer Address bar or the Netscape Location Bar.
3. Type **`www.direcwaysupport.com.`** If this does not work type http://192.168.0.1.
4. Press **ENTER.** The System Control Center **Home** screen appears. See Figure 43.

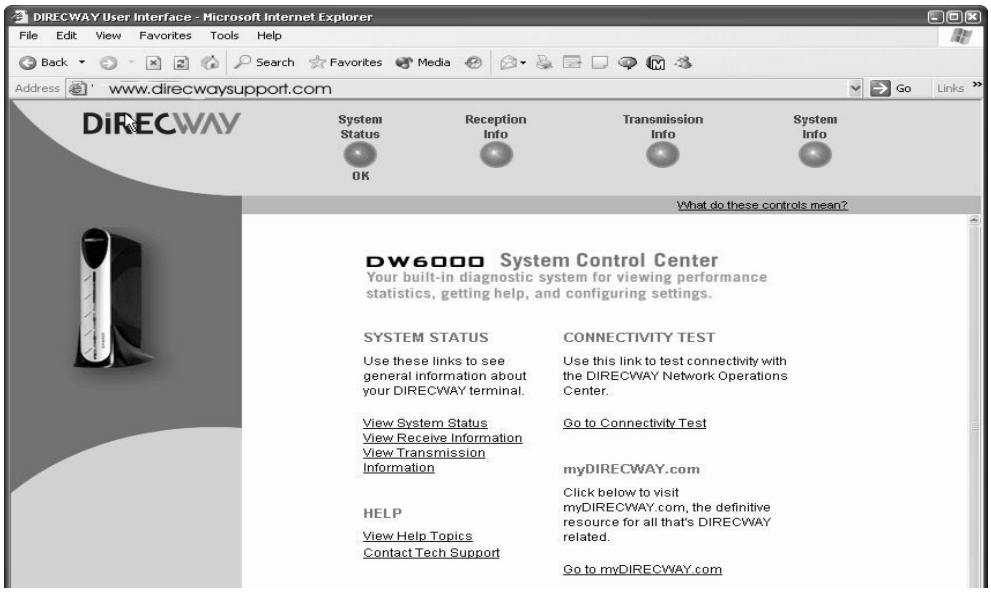

DIRECWAY User Interface - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address www.direcwaysupport.com
Go Links
DIRECWAY
System Status
OK
Reception Info
Transmission Info
System Info
What do these controls mean?
DW6000 System Control Center
Your built-in diagnostic system for viewing performance statistics, getting help, and configuring settings.
SYSTEM STATUS
Use these links to see general information about your DIRECWAY terminal.
View System Status
View Receive Information
View Transmission Information
HELP
View Help Topics
Contact Tech Support
CONNECTIVITY TEST
Use this link to test connectivity with the DIRECWAY Network Operations Center.
Go to Connectivity Test
myDIRECWAY.com
Click below to visit myDIRECWAY.com, the definitive resource for all that's DIRECWAY related.
Go to myDIRECWAY.com

Figure 43: System Control Center Home screen

If the System Control Center is not accessible

If the www.direcwaysupport.com address is not accessible, use 192.168.0.1 in the URL location bar. If the IP address also does not work, check that your computer is configured to obtain IP addresses automatically. If not, follow the instructions in Appendix D – *Configuring the installer laptop for IP addressing* to configure your computer to obtain an IP address automatically. Restart the computer and try accessing the System Control Center again.

If you cannot access the System Control Center through a browser, follow the instructions below.

1. First try to ping the DW6000 to confirm it is connected to the network and functioning. Open the **Run** dialog box by selecting **Start**→*Run.* Type **Command** and click **OK.**
2. Type **`ping 192.168.0.1`**. Press **Enter**.
3. If the client fails to ping the host, (that is, if the computer fails to ping the DW6000), the computer will report that no packets were received. There are issues with either the network hardware or configuration. Check the LAN connections, try restarting the computer, refer to the instructions that were provided with the network hardware, and retry the ping test.

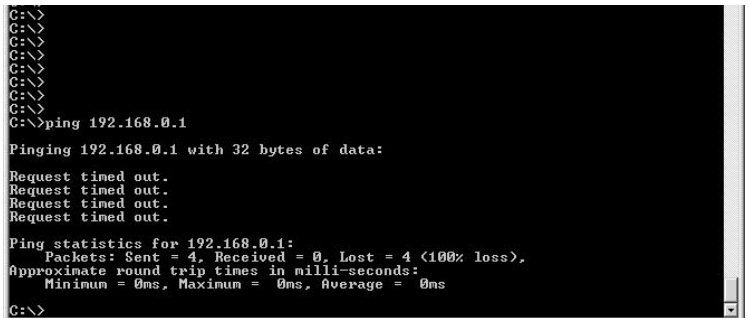


Figure 44: Failed ping

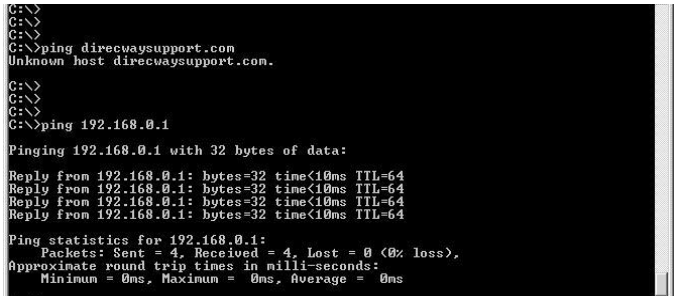

C:\>
C:\>
C:\>
C:\>ping direcwaysupport.com
Unknown host direcwaysupport.com.
C:\>
C:\>
C:\>
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Figure 45: Successful ping

The Home screen

The Home screen has system indicators across the top. There are links in by main body of the page.

System indicators

The system indicators consist of the following. See Figure 46. Clicking on the indicator displays the corresponding screen.

Note: The System Status indicator may be colored RED or GREEN while other indicators are always blue.

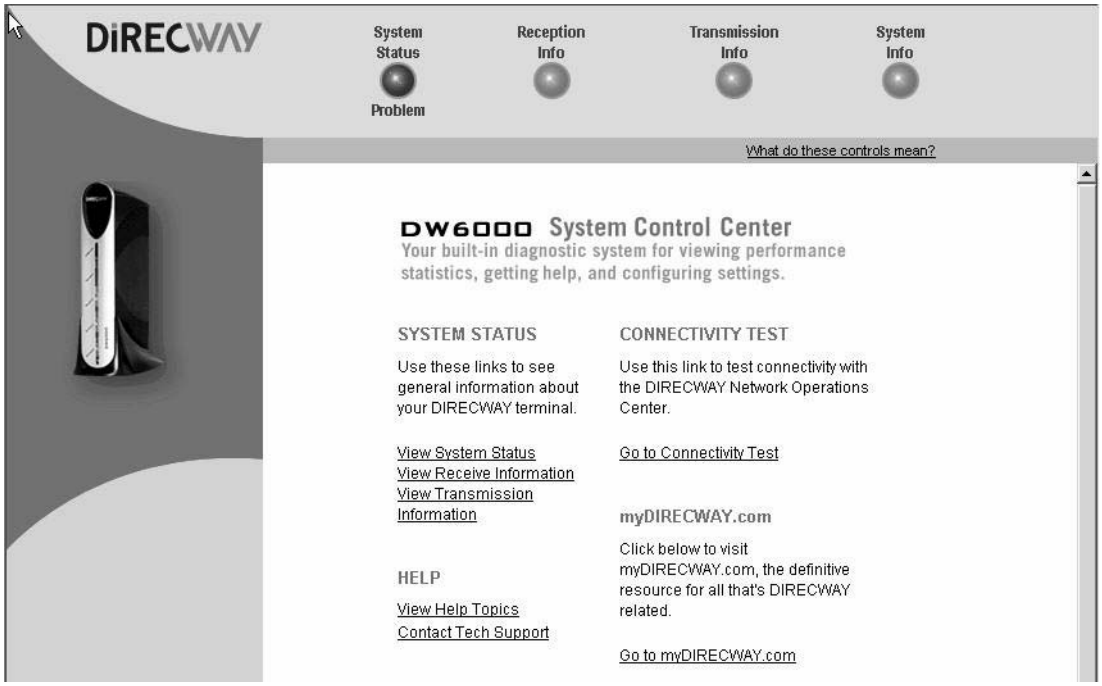
- System status reports on signal strength and transmit, receive, software download, commission, and TCP acceleration status. If the indicator is colored RED there is a problem with satellite connectivity. If the indicator is colored GREEN the satellite connection is operating properly.
- Reception info reports data on DW6000 receive functions. It also indicates if the receive function is working properly.
- Transmission info reports data on DW6000 transmit functions. It also indicates if the transmit function is working properly.
- System info provides information such as the DW6000 IP address, subnet mask, site ID, and what features are enabled.

If System Status reports a problem, click on the indicator to display a screen that describes the problem and corresponding help information. For more information, see *System Status* on page 42.

Links

The links consist of the following.

- View System Status- shows the same screen as when you click on the System Status indicator.
- View Help Topics - provides an extensive help library. This guide does not document everything in the System Control Center, which contains much useful information in its Help section.
- Contact Tech Support - directs you how to contact technical support. This information may vary by service plan.
- Connectivity test - this allows you to test DW6000 satellite connectivity with the NOC.
- myDIRECWAY - if part of the service plan, connects customers to **myDIRECWAY.com**, where they can register for additional features or information. (The feature is shown in these example screens.)


DIRECWAY
System Status
Problem
Reception Info
Transmission Info
System Info
What do these controls mean?
DW6000 System Control Center
Your built-in diagnostic system for viewing performance statistics, getting help, and configuring settings.
SYSTEM STATUS
Use these links to see general information about your DIRECWAY terminal.
View System Status
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HELP
View Help Topics
Contact Tech Support
CONNECTIVITY TEST
Use this link to test connectivity with the DIRECWAY Network Operations Center.
Go to Connectivity Test
myDIRECWAY.com
Click below to visit myDIRECWAY.com, the definitive resource for all that's DIRECWAY related.
Go to myDIRECWAY.com

Figure 46: PROBLEM is reported

System Status

The **System Status** screen displays the fields described below.

- Signal strength - receive signal strength. A value of 30 or less indicates an appropriate signal is not being received.
- Transmit status - indicates whether the transmit data path is operational. Clicking on the status message displays corresponding help information.
- Receive status - indicates if the receive data path is operational. Clicking on the status message displays corresponding help operation.
- Software Download Status - indicates whether DW6000 software and configuration is up-to-date.
- Commission Status - indicates if unit is commissioned.
- TCP Acceleration Status - indicates if TCP Acceleration is operational. TCP acceleration provides the expected performance on a DW6000.

Figure 47: System Status screen

Reception Info

The **Reception Info** screen displays the fields described below. Table 2 describes the RxCodes in detail.

- Receive status - reports the status of the receive data path. Clicking on the blue status message displays corresponding help information.
- Frames received- reports the number of data messages received by the DW6000 over the satellite link.
- Frames with Errors- reports the percentage of received frames that were found to be corrupted. A continuously increasing value indicates problems in the receive path. This may happen in adverse weather conditions or if the receive cable or the antenna has a problem. However, if a low nonincreasing value is displayed and the system is functioning, there is no reason for concern. You do not need to do any troubleshooting or contact installer support.
- Bad Key Frames- indicates the percentage of received frames that could not be decrypted successfully. All data received over the satellite is encrypted. A continuously increasing value indicates the unit is not commissioned.

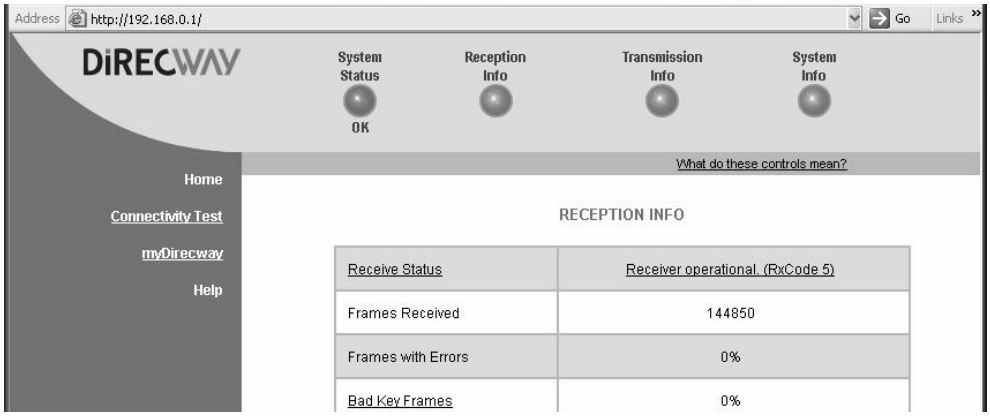


Figure 48: Reception info

Receive Status messages

The following messages may appear in the Receive Status field. The Comments section in Table 2 gives more information about each code, and describes any possible corrective measures. See Figure 49 on page 45 for corrective measure involving cables or the power supply. *Power cycling* means to unplug the power cord from the wall outlet or surge protector, wait 10 seconds, and plug it back in. If corrective measures do not solve a problem, contact installer support.

RxCode 5 means receive is working properly. It is the code you will see most of the time.

Table 2: Receive code (RxCode) messages and corrective actions

Numeric RxCode	Message Displayed	Comments
1	The receiver is in pointing mode	This condition indicates that the installer is performing antenna pointing. In this mode, the transmitter is disabled for safety reasons since the installer is working near the dish. If this occurs during normal operation, try power-cycling the DW6000 by unplugging the power cord from the wall outlet and then plugging it back in.
2	The receiver is in factory or NOC mode	This status is for DW6000 testing purposes only. You should never see it. If this occurs during normal operation, try power-cycling the DW6000 by unplugging the power cord from the wall outlet and then plugging it back in.
3	The receiver is not locked to a signal	If the DW6000 had been operating previously, this status is probably due to inclement weather conditions and will be corrected when the weather improves. This condition can also indicate that the unit is unable to receive the signal from the NOC. This is also associated with a signal level less than 30. This occurs if there is a weather outage at the user location, a NOC outage due to inclement weather or other reasons, a misaligned or faulty antenna, or faulty cabling. If this keeps happening under normal weather conditions, make sure the power supply is correct. The power supply should be Part # 1031105-0001. If the power supply is correct, try power-cycling the DW6000 by unplugging the power cord from the wall outlet and then plugging it back in.
4	The receiver is locked to the wrong network	This condition should only be seen during installation and occurs when the receiver is locked to an incorrect DIRECWAY satellite. This could also happen if the installer enters incorrect information during manual pointing. If this occurs during normal operation, it may be due to the user changing satellite parameters, or the antenna becoming misaligned.
5	The receiver is operational	This is the normal operating state where the receiver is receiving data from the NOC. Only when the receiver is in this state will the transmitter operate correctly.
6	The receiver is not detecting a signal	This condition occurs when the unit is not detecting any type of radio signal from the antenna. This could indicate that the cabling between the receiver and the antenna is faulty or that the receiver itself is faulty. Check that the cables are firmly connected on the DW6000. Also, make sure that the power supply is correct. The power supply should be Part # 1031105-0001. Try power-cycling the DW6000 by unplugging the power cord from the wall outlet and then plugging it back in.
7	The receiver is locked to an unknown network	This condition should only be seen during installation and occurs when the receiver is locked to a non-DIRECWAY satellite. In rare cases it may be due to a transient outage at the NOC. If this occurs during pointing or commissioning, the antenna has not been pointed correctly. If it occurs during normal operation, it may be due to the user changing satellite parameters, or the antenna becoming misaligned. The former condition can be corrected by re-commissioning the site. The latter requires an antenna repointing.

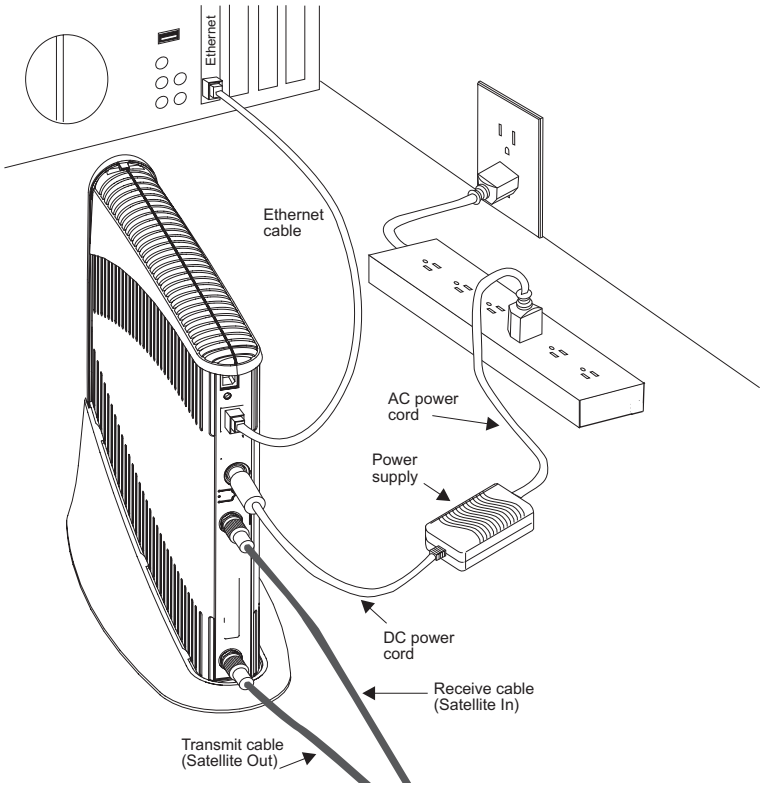


Figure 49: DW6000 connections

⚠ CAUTION

Never unplug the power cord from the DW6000 while it is powered on. Always disconnect the power cord from the power supply, wall outlet, or surge protector.

Transmission Info

The **Transmission Info** screen displays the fields described below.

- Transmit status - reports the status of the transmit data path. Clicking on the blue status message displays corresponding help information.
- Number of successful transmissions- reports the number of frames transmitted to the satellite.
- Number of failed transmissions- reports the number of frames that could not be sent. A continuously increasing value indicates a problem with transmitting. However, if a low nonincreasing value is displayed and the system is functioning, there is no reason for concern. You do not need to do any troubleshooting or contact installer support.
- Number of packets submitted for transmission- indicates total number of data queued for transmission to the satellite..

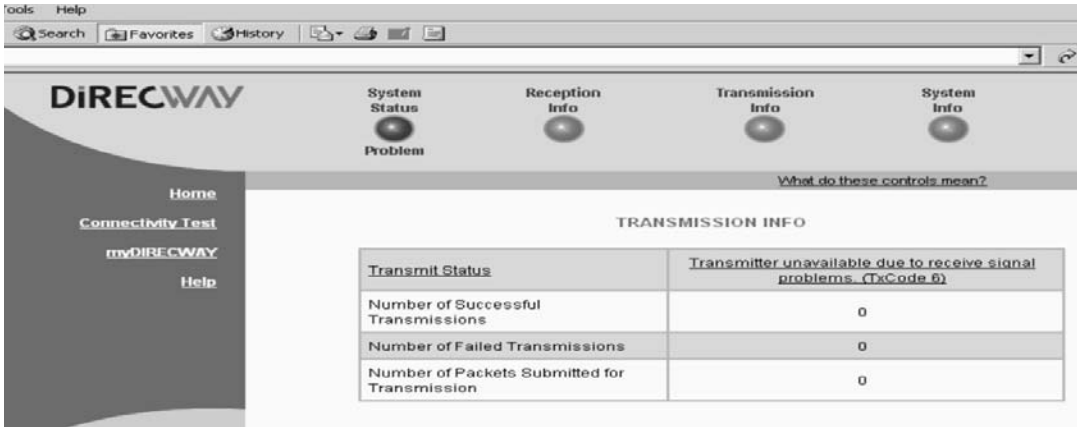


Figure 50: Transmission Info screen

Transmit messages

The following messages may appear in the Transmit field. The Comments section gives more information about each code, and describes any possible corrective measures. See Figure 49 on page 45 for corrective measure involving cables or the power supply. *Power cycling* means to unplug the power cord from the wall outlet or surge protector, wait 10 seconds, and plug it back in.

If corrective measures do not solve a problem, contact installer support.

TxCode 8 means the transmit is working properly. It is the code you will see most of the time.

Table 3: Transmit (TxCode) messages and corrective actions

Numeric TxCode	Message Displayed	Comments
1	The transmitter has been disabled by the Network Operations Center	This condition occurs when the transmitter is not enabled. A transmitter may be disabled for short periods of time by the NOC for service or troubleshooting. It may also be disabled if the user discontinues the satellite service. If this condition persists, it can only be corrected by requesting that the unit be enabled.
2	The transmitter has been placed in test mode by the Network Operations Center	This status requires no user action and this test usually completes in 15 minutes or less. This condition occurs when the NOC places the transmitter into special transmission modes to measure the performance of the transmitter. When in this mode, the unit is unable to transmit normal user data to the NOC.
3	The transmitter is locking to the receive carrier	This condition occurs during initial startup or when the receiver is locking to the receive signal. It is normal for this condition to persist for up to 10 seconds. If this condition persists for more than 10 seconds, try disconnecting and reconnecting the receiver coaxial cable and wait 10 seconds. If the situation still persists, then the DW6000 may need to be replaced.
5	The transmitter is not locked to the network timing	No action is necessary if this condition occurs from time to time and quickly resolves itself. If this issue persists, it is likely due to a NOC-related service issue. The condition may also be due to DW6000 failure; in rare cases, the unit may fail and may have to be replaced.
6	The transmitter is not available because the receiver is not detecting a signal or is not locked to the correct network	Check your receive signal. This condition occurs when the DW6000 is not detecting a good signal. The receiver must be locked to the correct network in order for the transmitter to operate. If the receiver is not locked (no signal) or is locked to the wrong network, the transmitter is unable to transmit data. Please verify that you have a good signal strength by going to the Receive Statistics page. This could also be caused by inclement weather.
7	The transmitter is not available because the satellite receiver is not tuned for normal operation	This condition occurs when the transmitter is disabled for safety reasons. If this happens during installation or commissioning, the installer will close the Antenna Pointing program and resolve the condition.
8	The transmitter is available	This is the normal operational state and indicates that the transmitter is ready to transmit data.
9	The transmitter is adjusting for optimal network timing	This condition typically occurs when the DW6000 is first commissioned or the first time it is used for data traffic. This must occur before the DW6000 is able to transmit successfully. Typically, this process usually takes less than a minute.
10	The transmitter is unable to communicate with the Network Operations Center	This condition indicates that the unit has stopped attempting to transmit user data because there were a number of failures in sending data to the NOC over the satellite link. This could be the result of weather conditions causing lost packets or, rarely, return channel equipment failures in the NOC.
11	The transmitter is not available because the receiver software is out of date	This condition indicates that the installed software version is not recent enough to operate on the network. New software will be required from time to time due to network infrastructure and capability upgrades and in order to maintain network efficiency and fix any known problems.The system will automatically update the software version to ensure that you can enjoy uninterrupted operation. If you do not use the DW6000 for a long period of time and miss the updates, you may need to contact your service provider.

Table 3: Transmit (TxCode) messages and corrective actions

12	The transmitter is not receiving network control messages from the Network Operations Center	This condition indicates a NOC equipment outage. This should be a transient condition and the system should recover automatically.
13	The transmitter is unable to range because it cannot communicate with the Network Operations Center	Ranging is the process that adjusts the satellite transmitter timing and power. The satellite transmitter conducts ranging as needed to ensure that it can communicate successfully with the Network Operations Center. This condition can indicate any of the following: • The NOC is not receiving ranging information from the transmitter. This may indicate a transmit problem at the NOC. This should get cleared in a few minutes. • The transmitter is unable to achieve enough transmit power to send ranging information to the NOC. Make sure that the power supply is correct. The power supply should be Part #1031105-0001. • The transmitter is sending incorrect timing data because an incorrect ZIP code or incorrect latitude/longitude information was entered during installation. • The outdoor transmitter unit (ODU)--that is, the antenna--is not operating properly or is not properly connected to the DW6000. Please ensure that the transmit cable is securely fastened to the satellite out connector.
14	The transmitter is not available because ranging has failed	This condition indicates that the transmitter is not operational because ranging has failed. Ranging is the process that adjusts the satellite transmitter timing and power. The satellite transmitter conducts ranging as needed to ensure that it can communicate successfully with the Network Operations Center. The ranging failure may happen due to the antenna becoming misaligned or if repeated attempts to range do not succeed. This condition may also be caused due to adverse weather conditions. In rare cases, this may also indicate NOC issues but should clear within a few minutes. If the system was operational in the past and you see these messages repeatedly, you can try to force range by performing the Connectivity Test.
15	The transmitter is waiting for a ranging request to be processed by the Network Operations Center	This condition occurs if the system is busy adjusting power and timing for other users. This process may take up to a minute or more.
16	The transmitter is waiting for a transmit request to be processed by the Network Operations Center	This condition occurs when the system is unable to provide transmit bandwidth. This occurs when many users sign-on simultaneously. It should clear in a few minutes automatically.
17	The satellite transmitter is unable to obtain an available transmission rate	This condition occurs if the transmitter cannot successfully range. Ranging is the process that adjusts the satellite transmitter timing and power. The satellite transmitter conducts ranging as needed to ensure that it can communicate successfully with the Network Operation Center. A possible cause is that the transmitter could not achieve enough power to transmit. This is likely caused because the antenna is not accurately pointed. However, it may also be a transmitter power problem. Check the power supply and make sure that it is Part # 1031105-0001.

Table 3: Transmit (TxCode) messages and corrective actions

18	The transmitter is requesting a transmit pointing test	This condition can occur during installation when the Antenna Pointing program requests that the transmitter perform a transmit pointing test. This condition persists until the NOC responds that the transmitter is either actively performing the pointing test or is queued to perform the test when test resources become available in the NOC. This is a normal condition for initial installation. The transmitter may also periodically go into this condition for short periods of time (less than 5 seconds) to perform periodic transmit pointing tests. These periodic tests are performed to ensure that the antenna is pointed accurately.
19	The transmitter is queued for a transmit pointing test	This condition can occur during installation when the Antenna Pointing software requests a transmit pointing test and the NOC has responded that the transmitter is queued for the next available test time. It may also occur when the transmitter is performing periodic background transmit pointing tests at the same time that other users on the network have requested tests. This is a normal state after initial installation.
20	The transmitter is performing a transmit pointing test	This condition occurs when one of the following tests are active: • During installation, the Antenna Pointing software requests that the transmitter perform a transmit pointing test. This condition will persist until the Antenna Pointing software exits from the transmit pointing test mode. • The DW6000 performs a periodic background transmit pointing test to make sure that the antenna is still pointed correctly. This periodic test takes less than 5 seconds. If the problem persists, try power-cycling the DW6000 by unplugging the wall outlet and plugging it back in.
21	The transmitter is disabled because a transmit pointing test failed	This condition occurs when the transmitter fails a transmit pointing test. This indicates that the transmitter did not meet the minimum specifications required. This is likely due to an antenna installation problem. The antenna installer needs to fine-point the antenna. The transmitter will not transmit until the transmit pointing test passes.
22	The transmitter is disabled pending a transmit pointing test	This condition occurs when the transmitter is required to perform a periodic background transmit pointing test, but has not been able to perform the test within the time window required. The transmitter is expected to be in this condition for no more than two minutes at random periodic intervals. This condition can also occur after the transmitter is first powered on after it has been powered off for more than a day. If the unit remains in this condition for more than two minutes, then the automated transmit pointing components in the NOC are likely experiencing problems. This condition should clear in a few minutes.
23	The transmitter is disabled because a transmit pointing test cannot be performed	This condition occurs when the transmitter cannot perform the transmit pointing test when initially installed or when the transmitter is required to range. The condition indicates that the NOC components needed to perform the transmit pointing test are not operational.

System Info

The System Information screen displays a number of fields. While all the information may be useful at some time, the most important is discussed below.

Note: Print the System Information screen and tell the customer to save it. It will be needed should they need to call their service provider and not be able to access the System Control Center.

- DW6000 Info section
  - `Serial number -` needed to identify customer's unit when troubleshooting.
  - `Software creation date` - software build date.
  - `Software release number` - version of the software on the DW6000.
  - `IP Address -` the address of the DW6000.
  - `Subnet Mask -` defines range of addresses assigned to the DW6000.
  - `Site ID` - Site identification number.
- Satellite section
  - `Longitude -` displays the satellite's longitude.
  - `Receive frequency` – transponder frequency configured for the DW6000.
  - `Receive Polarization -` polarization orientation, which is either horizontal or vertical.
  - `Router Address` – IP address of the primary router used to route data sent by the DW6000.
- Software Configuration section- Turbo Page, NAT, and DHCP are enabled or disabled as per a customer's service offering and cannot be changed by the customer.
  - `Network Address Translation (NAT)` - typically used to allow multiple computers to share a single address on the Internet. It also allows preconfigured remote networks to be integrated easily with the DIRECWAY network.
  - `Dynamic Host Configuration Protocol (DHCP)` if enabled, this simplifies the network configuration of the computers. The computers just need to be set up to "Obtain IP address automatically."
  - `Turbo Page` - if enabled, speeds Web surfing.

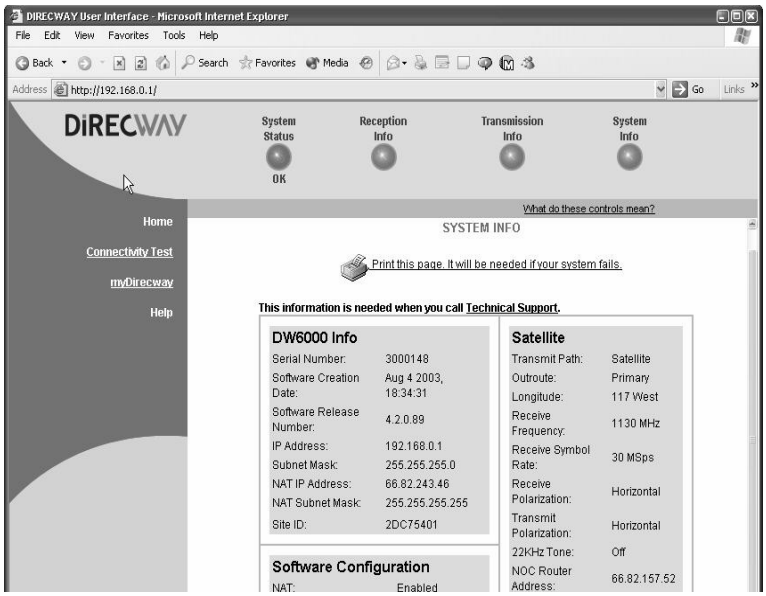


Figure 51: System Information; print and save this screen

The Connectivity Test Link

The unit may lose connectivity to a particular server due to the Internet being heavily loaded or due to the server being down. If possible, check connectivity to some other server on the Internet to ensure it is not a server specific problem. Follow the procedure below for troubleshooting.

Network Operations Center (NOC) Connectivity

Use the Connectivity Test link to check connectivity to the DIRECWAY NOC.

Note: You may want to open a second browser window to be able to access the help page while conducting the Connectivity Test.

1. Click on Connectivity Test on the left hand side of the **System Control Center**. A screen with a **Start Test** button appears.
2. Click **Start Test**. A message will appear, informing you if the test was successful.
   If the connectivity test fails, check **System Status** and follow the troubleshooting steps outlined earlier.
   If the connectivity test succeeds, try pinging the Router Address from the computer. This address can be obtained from the System Information page. To ping, use the same set of instructions that are in *If the System Control Center is not accessible* on page 39, except type the Router Address.
   If this succeeds, skip to the Internet Connectivity test below.
   If this fails, the default gateway address is probably not set correctly in the computer's network settings. The default gateway address should be the DW6000 IP address as received during commissioning and displayed in **System Information**. Fix this in the computer's network settings and repeat the connectivity test.
   If the connectivity test still fails, power-cycle the DW6000 by unplugging the power cord from the wall outlet and plugging it back in. If this doesn't fix the problem, call installer support.

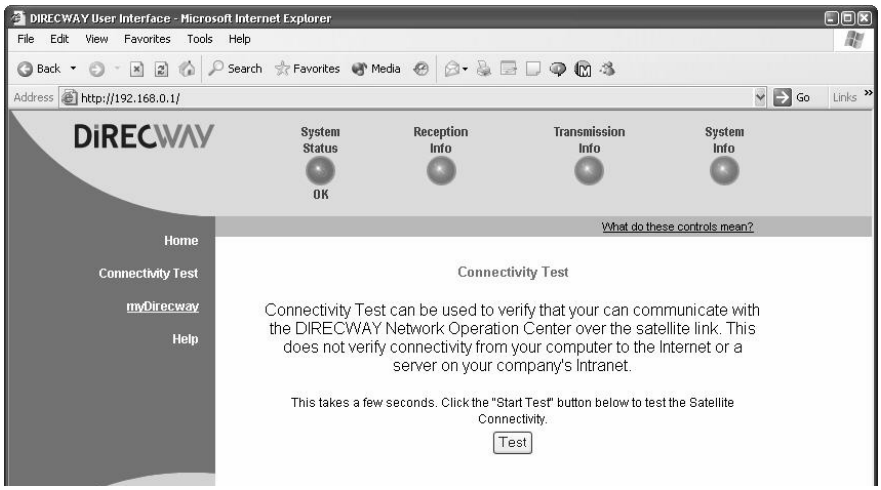

DIRECWAY User Interface - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://192.168.0.1/
Go Links
DiRECWAY
System Status
OK
Reception Info
Transmission Info
System Info
What do these controls mean?
Home
Connectivity Test
myDirecway
Help
Connectivity Test
Connectivity Test can be used to verify that your can communicate with the DIRECWAY Network Operation Center over the satellite link. This does not verify connectivity from your computer to the Internet or a server on your company's Intranet.
This takes a few seconds. Click the "Start Test" button below to test the Satellite Connectivity.
Test

Figure 52: Connectivity Test

Internet Connectivity

Try pinging the DIRECWAY Web server (www.direcway.com). Use the same set of instructions that are in *If the System Control Center is not accessible* on page 39, except type www.direcway.com.

Note: The DIRECWAY Internet server may not be accessible or may not respond. In such a case, you should try to ping another Web server.
If pinging a different Web server succeeds, the problem is probably in the particular server that you were trying to access.

If pinging a different Web server does not succeed, try pinging the DNS server address 198.77.116.8. If you cannot ping the address, contact installer support. Business customers should contact their System Administrator.

If you can ping the address, check your DNS Server settings in your operating system information. In Windows, for example, the menu is accessed via *Programs→Settings→Control Panel→ Network→Protocols→Properties→DNS*. If you are using the DIRECWAY DNS Server, make sure the DNS settings include the "198.77.116.8" address. If not, use the Add button to add it to the search order list. Then try accessing the DIRECWAY Internet server or other Web servers. You should be successful.

If these steps do not work, wait awhile and try them again. There may be a temporary Internet connection outage. If you retry all the steps above and still cannot establish Internet connectivity, please contact your service provider for further assistance.

The Help Menu

The **Help Menu** contains information about receive and transmit status messages, installation, troubleshooting, and other topics. Review it to become familiar with the System Control Center and with the DW6000. Access it by clicking on **Help**.

Note: Print the answer to the entry in the System Control Center Troubleshooting page, "I am unable to access the DW6000 Web interface. Ping doesn't work also." The information on this page will help you if you cannot access the System Control Center.

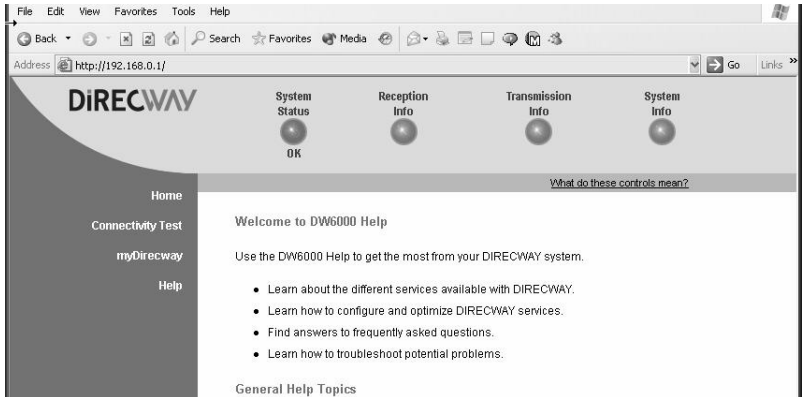


Figure 53: Help Menu

myDIRECWAY

If it is part of their service plan, customers can click on **myDIRECWAY** to go to myDIRECWAY.com. Members get access to a variety of interactive tools and can check usage online, test satellite speed, manage passwords, and more. Members also can configure e-mail and ISP accounts. Customers cannot see **myDIRECWAY** in the Home screen if it is not part of their service plan.

Advanced pages

The Advanced pages contain a great deal of information. You may need to access them to communicate with installer support or to configure special features, such as DIRECWAY Virtual Private Network Automatic Dial Backup (DVADB).

To access Advanced pages, in the browser address bar type:

`192.168.0.1/fs/advanced/advanced.html` and press **ENTER**. A page like the one in Figure 54 appears.

Note: Never show the Advanced pages to a customer. Never use a customer's computer to access the Advanced pages.

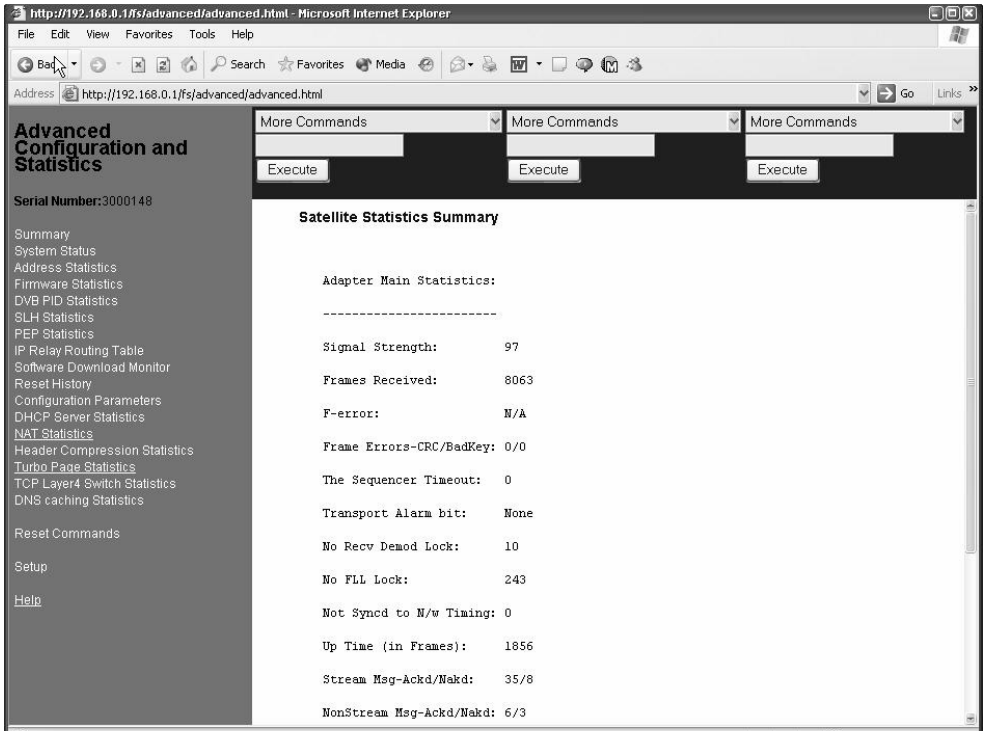


Figure 54: Advanced pages

Chapter 4

DW6000 LEDs and troubleshooting

The DW6000 LEDs can provide information about operating status. Some information is also provided for troubleshooting units that aren't functioning at all, or don't seem to be functioning as well as they might.

- If you cannot surf the Internet but can access the Control Center, refer to the troubleshooting procedures in *Cannot surf but can access Control Center* on page 58.
- If you cannot access the Control Center, refer to the troubleshooting procedures in *Cannot access the Control Center* on page 66.
- If you have a device other than a computer connected to the DW6000, refer to the troubleshooting procedures in *Device other than computer connected to DW6000* on page 71.

Cannot surf but can access Control Center

If you cannot surf the Internet but can access the Control Center, follow the troubleshooting procedures below. Remember that any problem may be caused by more than one thing. If you implement a troubleshooting procedure but still cannot surf, proceed to the next step. Also, try the troubleshooting procedures more than once before contacting installer support.

Remember: if you cannot access the Control Center by clicking on the shortcut or typing www.direcwaysupport.com in the URL address or location bar, try typing **`http://192.168.0.1`** in the bar and pressing Enter.

Check that the unit is commissioned

1. At the Control Center, click on the **System Info** indicator. The System Info screen appears. See Figure 55.
2. In the DW6000 Information box, check the Site ID line.
   If the numerical site ID appears, the unit is commissioned. Proceed to the next troubleshooting step.
   If `Not Commissioned` appears, the DW6000 is not commissioned. Contact installer support.

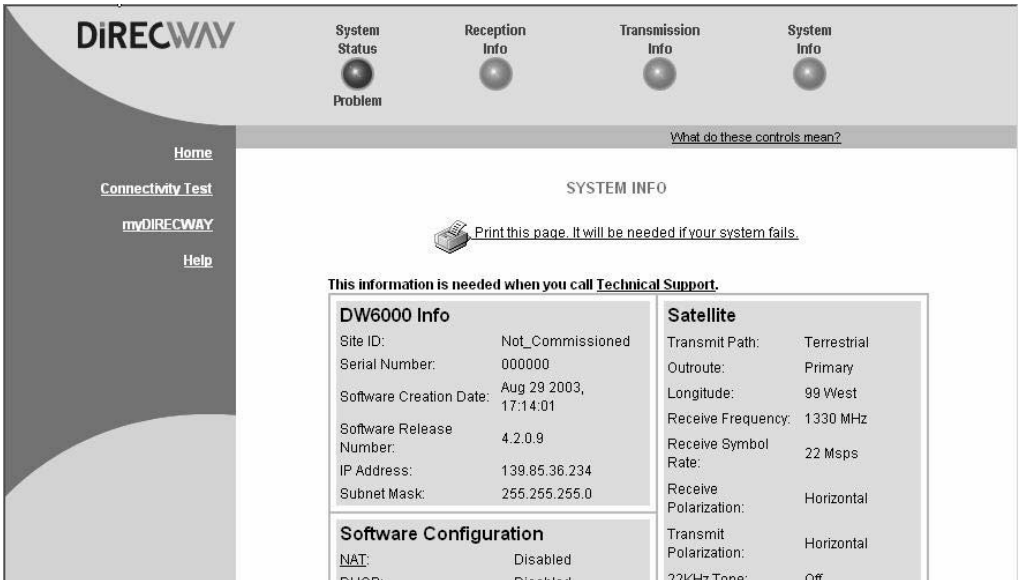


Figure 55: System Info indicator screen

Check receive signal

The DW6000 will not function if satellite signals are not received properly.

1. At the Control Center, click on the **Reception Info** indicator. The Reception Info screen appears. See Figure 56.
2. In the Receive Status row, check the Rx Code.
   If the Rx Code is `The receiver is operational (RxCode 5)` the DW6000 is receiving signals properly. Proceed to the next troubleshooting step.
   If any other Rx Code appears, the DW6000 is not receiving signals properly. Click on the Rx Code. Follow the troubleshooting procedure that appears.

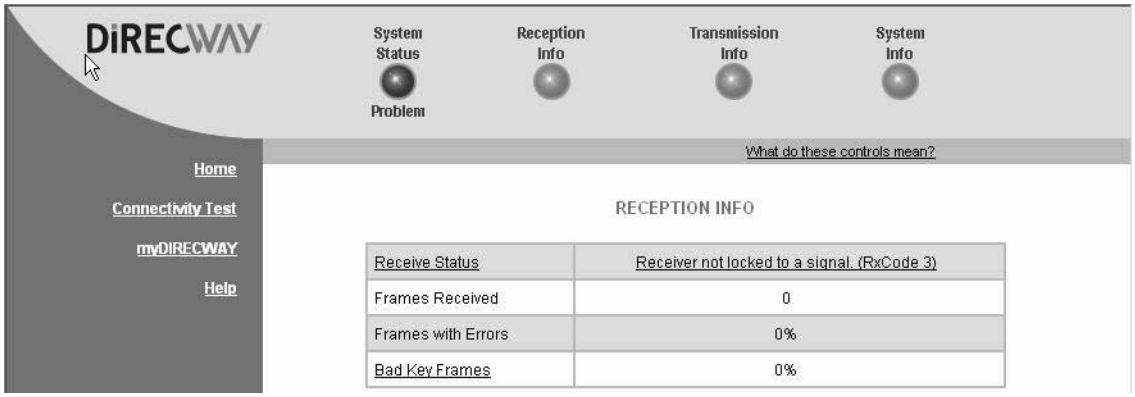


Figure 56: Reception info

Check transmit signal

The DW6000 will not function if satellite signals are not transmitted properly.

1. At the Control Center, click on the **Transmission Info** indicator. The Transmission Info screen appears. See Figure 57.
2. In the Transmit Status row, check the Tx Code.

If the Tx Code is `Transmitter available for Normal Operation (TxCode 8)` the DW6000 is transmitting signals properly. Proceed to the next troubleshooting step.

If any other Tx Code appears, the DW6000 is not transmitting signals properly. Click on the Tx Code. Follow the troubleshooting procedure that appears.

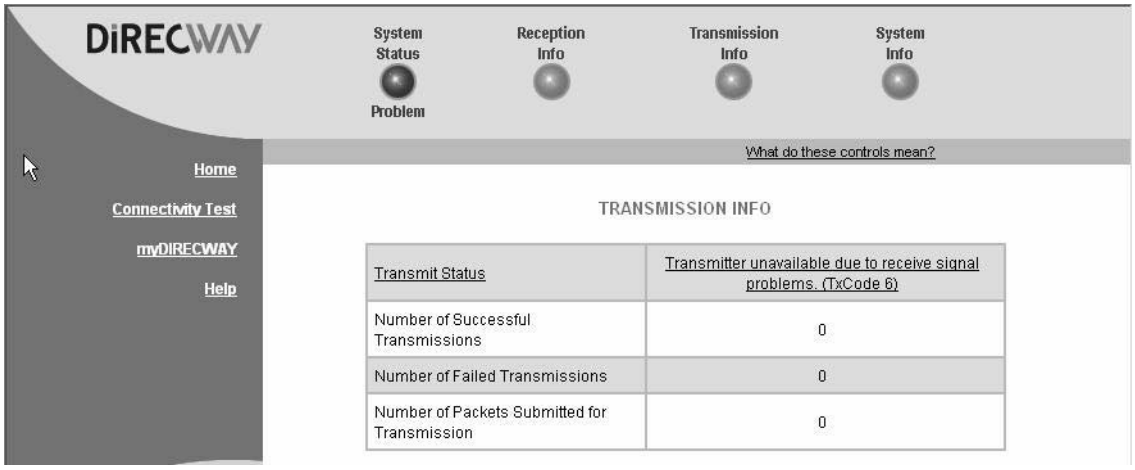


Figure 57: Transmission info

Check that TCP acceleration is operational

TCP Acceleration is a proprietary protocol provided by DIRECWAY. It optimizes performance for TCP/IP-based applications, including faster downloads over satellite.

1. At the Control Center, click on the **System Status** indicator. The System Status screen appears. See Figure 58.
2. Check the message in the TCP Acceleration Status row.
   If the message says `Enabled`, TCP Acceleration is enabled. Proceed to the next troubleshooting step.
   If the message says `Disabled`, TCP Acceleration is disabled. Perform the following steps.
   a. Power cycle the DW6000. Unplug the AC power cord from the power strip or surge protector, wait 10 seconds, and plug it back in. See Figure 63 on page 68. Then check the TCP Acceleration Status again. If it is enabled but you still cannot surf the Internet, proceed to the next troubleshooing step.
   b. If TCP Acceleration is still disabled after power cycling, wait 30 minutes and then check TCP Acceleration Status again.
   c. If TCP Acceleration is still disabled after waiting 30 minutes, contact installer support.

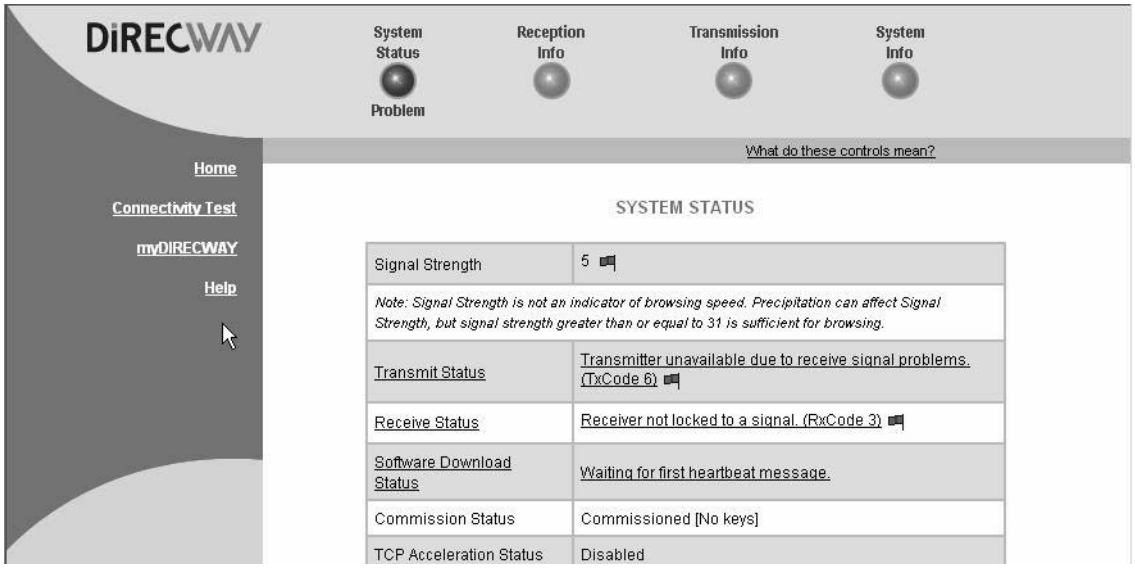


Figure 58: System Status, TCP Acceleration Status

Check Network Operations Center (NOC) connectivity

Use the **Connectivity Test** link to check connectivity to the DIRECWAY Network Operations Center (NOC).

Note: You may want to open a second browser window to be able to access the help page while conducting the Connectivity Test.

1. Click on Connectivity Test on the left hand side of the **System Control Center**. A screen with a **Start Test** button appears. See Figure 59.
2. Click **Start Test**. A message will appear, informing you if the test was successful.
3. If the connectivity test succeeds but you still cannot surf the Internet, try *pinging* the Router Address from your computer. *Ping* is a basic Internet program that lets you verify that a particular IP address exists and can accept requests. Ping is used diagnostically to ensure that a host computer you are trying to reach is actually operating. Ping operates by sending a packet to a designated address and waiting for a response. Windows and MacIntosh operating systems both let you use ping.
   a. At the Control Center, click on the **System Info** indicator. The System Info screen appears.
   b. From the DW6000 Information box, record the router address.
   c. In Windows, go to *Start→Run*. The Run box appears.
   d. Type **`command`** in the Open field and click **OK**. The *Command* window appears. See Figure 60.
   e. At the prompt, type **`ping`** followed by a space and the router address and press **ENTER**. For example, if the router address is 100.100.100.100, type **`ping 100.100.100.100`** and press **ENTER**. If the ping is successful, the message in Figure 60 appears. If it fails, the message will show the packets were lost; timeout messages will probably also appear. See Figure 61.
   f. Close the window to end the Command session.

   If pinging the Router Address succeeds but you still cannot surf the Internet, skip to the Internet Connectivity test below.

   If pinging the Router Address fails, the default gateway address is probably not set correctly in the computer's operating system settings. The default gateway address should be the DW6000 IP address as received during commissioning and displayed in the System Information DW6000 Info box in the IP address line. Fix this in the computer's operating system settings. See Appendix A – *Typical operating system settings,* on page 43. Then repeat the sequence above.

If the tests still fail, power cycle the DW6000 by unplugging the power cord from the power strip or surge protector, waiting 10 seconds, and plugging it back in. If you still can't surf the Internet, call your service provider.

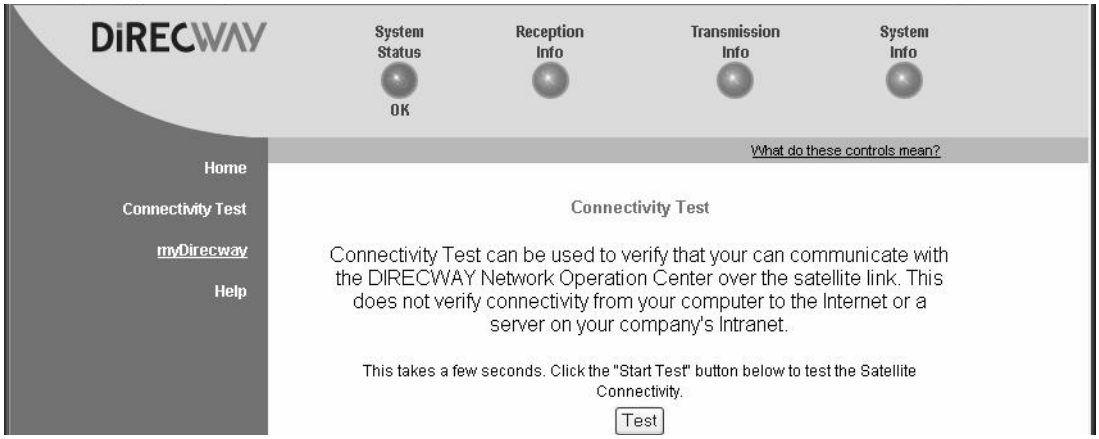

DIRECWAY
System Status
OK
Reception Info
Transmission Info
System Info
What do these controls mean?
Home
Connectivity Test
myDirecway
Help
Connectivity Test
Connectivity Test can be used to verify that your can communicate with the DIRECWAY Network Operation Center over the satellite link. This does not verify connectivity from your computer to the Internet or a server on your company's Intranet.
This takes a few seconds. Click the "Start Test" button below to test the Satellite Connectivity.
Test

Figure 59: Connectivity Test

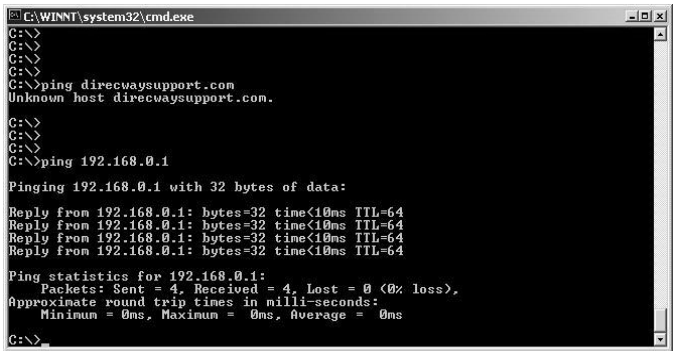

C:\WINNT\system32\cmd.exe
C:\>ping direcwaysupport.com
Unknown host direcwaysupport.com.
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Figure 60: Successful ping

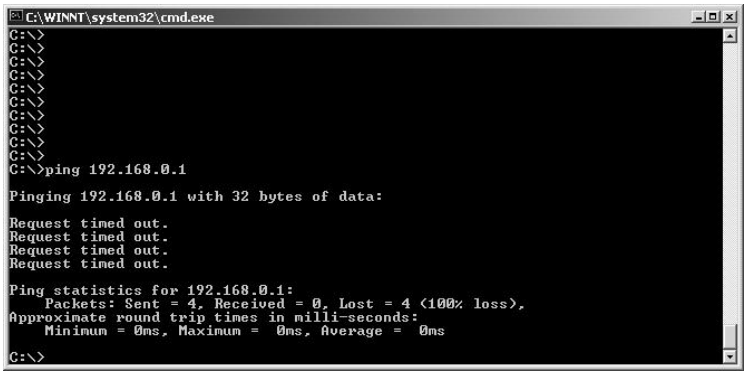

C:\WINNT\system32\cmd.exe
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Figure 61: Failed ping

Internet Connectivity

Sometimes the Internet or Internet site is experiencing problems. Try pinging the DIRECWAY Web server (www.direcway.com) instead of the Web server or site you could not connect to.

Note: The DIRECWAY Internet server may not be accessible or may not respond. In such a case, you should try to ping another Web server.

If pinging the DIRECWAY Web server succeeds, the problem is probably in the particular Web server that you were trying to access. Try accessing it later.

If pinging the DIRECWAY Web server does not succeed, try pinging the DNS server address 198.77.116.8. If you cannot ping that address, contact installer support. If you are a business customer contact your System Administrator.

If you can ping the DNS server address but not surf the Internet, check the DNS Server settings in your operating system TCP/IP settings. In Windows 2000, for example, the menu is accessed using the instructions below. Other Windows systems will have similar windows and menus.

1. Go to *Programs→Settings→Control Panel→Network and Dial-up Connections*.
2. Right-click on the *Local Area Connection* icon and select *Properties*. The *Local Area Connection Properties* window appears.
3. Select TCP/IP from the list of components and click Properties. The *Internet Protocol (TCP/IP) Properties* window appears.
4. Click Advanced. The *Advanced TCP/IP Settings* window appears.
5. Click Add in the Default Gateways box. A TCP/IP Gateway Address screen appears.
6. Type **`198.77.116.8`** in the Gateway field and click Add. The address is added to the Default Gateways list.
7. Click OK to close all the windows.
8. Now try accessing or pinging the DIRECWAY Internet server or other Web servers again. You should be successful.

If these steps do not work, wait awhile and try them again. There may be a temporary Internet connection outage.

If you still cannot surf the Internet and you are using a firewall, work through the firewall instructions below. Otherwise, please contact your service provider for further assistance.

Check for virus and firewall issues

If you have checked gone through all the steps in this section and still cannot surf the Internet, check your computer for viruses. A virus can prevent you from operating normally. If you find a virus, delete or disable it and try surfing again.

If you are using a firewall, check that none of your settings are blocking access to the Internet or the DIRECWAY servers. If you do not know how to do this, disable the firewall. If you can surf after disabling the firewall, you need to learn how to set up the firewall so that it does not block DIRECWAY. Refer to the firewall manufacturer's instructions.

Finally, check and make sure you are using the latest version of your virus and/or firewall program. These are updated frequently. If you are not using the latest version, update and run the programs again.

Cannot access the Control Center

If you cannot access the Control Center, you can still get information from the DW6000 LEDs that can enable you to restore connectivity. Follow the troubleshooting procedures below. Remember that any problem may be caused by more than one thing. If you implement a troubleshooting procedure but still cannot access the Control Center, proceed to the next step. Also, try the troubleshooting procedures more than once before contacting installer support.

Remember to also try to access the Control Center by clicking on the shortcut or typing www.direcwaysupport.com in the URL address or location bar, try typing **`http://192.168.0.1`** in the bar and pressing Enter.

The DW6000 LEDs

The DW6000 has five LED indicators on the front panel. See Figure 11 on page 17. They are listed below.

Note: Whenever the LEDs do not function properly as described below, check to be sure you have the correct power supply, PN 1031105-0001.

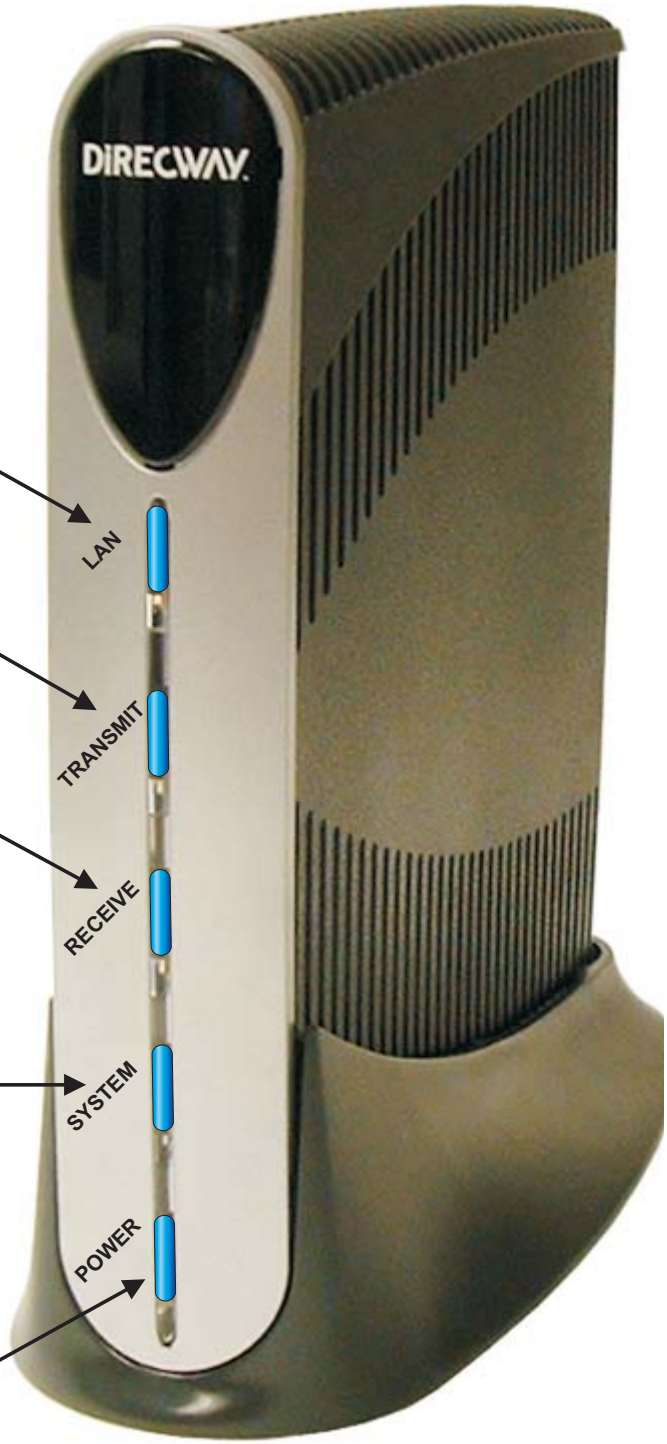
- **LAN -** The LAN indicator shows whether the LAN is connected and usable, and whether there is receive or transmit activity.
- **Transmit -** The Transmit indicator shows whether the DW6000 can transmit or is transmitting, or if some condition is preventing transmission.
- **Receive -** The Receive indicator shows whether the DW6000 has acquired the correct outroute, is receiving, or if some condition is preventing reception.
- **System -** The System indicator shows whether the DW6000 is completely operational or not.
- **Power -** The Power indicator shows if the DW6000 is powered on and operating normally.

Fatal error indication

If the Power LED is off and one or more of the other LEDs is flashing, the unit may have to be replaced. If there is not fatal error indication, proceed to the next troubleshooting step.

First try power cycling the DW6000 by disconnecting the power from the power strip or surge protector, waiting 10 seconds, and then plugging it back in. The unit may recover.

Note: If the fatal error indication continues, the unit must be replaced. Please contact installer support.



LAN LED
Solid blue = LAN is connected and usable
Flashing blue = there is transmit or receive activity on the LAN

Transmit LED
Solid blue = OK
Flashing blue = transmitting frames
Off = condition preventing transmission

Receive LED
Solid blue = OK
Flashing blue = receiving frames
Off = condition preventing acquisition of outroute (preventing receiving)

System LED
Solid blue = system operational
Off = condition preventing full operation

Power LED
Solid blue = power is on and unit is functioning normally
Blinking = running fallback.bin (backup software)
Off = no power
Off with some other LED flashing = fatal error

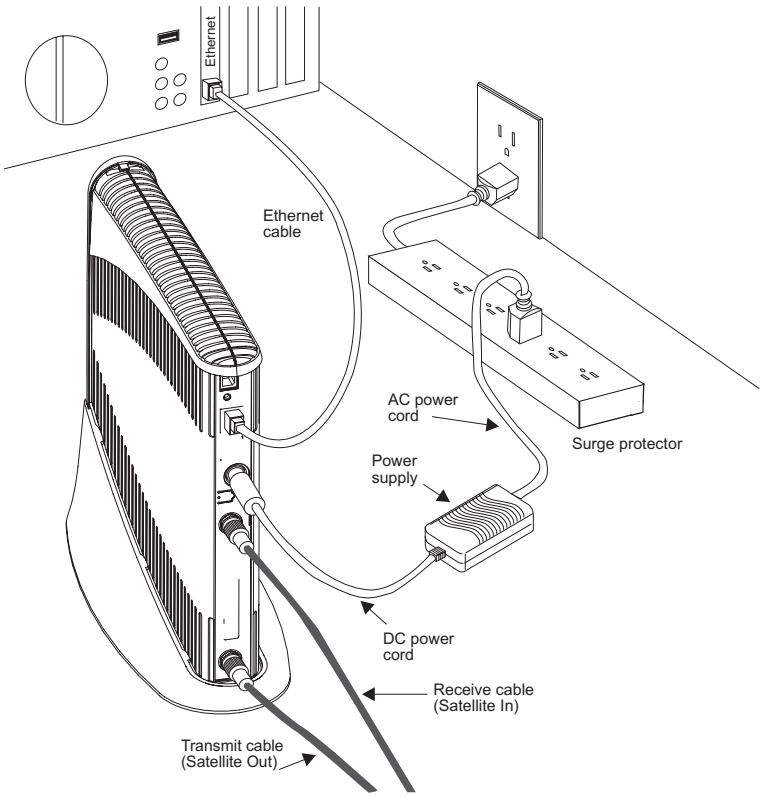


Figure 63: DW6000 power and cable connections

All LEDs off If all the LEDs are off, check that all the power connections are secure. If they are, unplug the AC power cord from the surge protector or other power source. If the LEDs do not come on, contact installer support.

Check the Power LED Check the Power LED. If it is lit, proceed to the next troubleshooting step. If it is not lit, perform the following steps.

1. Power cycle the DW6000 by unplugging the power cord from the power strip or surge protector, waiting 10 seconds, and plugging it back in.
2. If the Power LED is still not lit, check that the AC cord is securely attached to both the power adapter and the DW6000.
3. If the Power LED is still not lit, plug a small appliance, such as a radio, into both the power strip or surge protector and the wall outlet or other power source. If it works, the power sources are functional. Call installer support for assistance.

Check the LAN LED

Check the LAN LED. If it is lit, proceed to the next troubleshooting step. If it is not lit, perform the following steps.

1. Check that the Ethernet cable is connected to the DW6000 LAN port and to the computer's Ethernet port.
2. If the LAN LED is still not lit, power cycle the DW6000 by unplugging the power cord from the power strip or surge protector, waiting 10 seconds, and plugging it back in.
3. If the LAN LED is still not lit, check the Windows Device Manager to see if your computer's NIC is installed correctly.
   a. In Windows 2000, for example, right-click **My Computer** on the desktop and choose *Properties→Hardware→Device Manager*. A screen appears listing all the devices installed on the computer.
   b. If the NIC is not properly installed, a red X will appear next to its listing. Troubleshoot the NIC installation using the manufacturer's instructions and Windows documentation.
   If the My Computer icon is not available, click *Start→ Settings→Control Panel→Administrative Tools→Computer Management→System Tools→Device Manager*.
4. If the LAN LED is still not lit after fixing any NIC problems, check the back panel LEDs.
   a. If the Orange LED is lit and the front panel LAN LED is NOT, please contact Technical Support for further assistance.
   b. If both the Orange LED and the front panel LAN LED are not lit, check all network equipment that connects the computer with the DW6000, including the computer's Ethernet card, Ethernet cable(s) and any switch or hub. Swap out one or more of the items to isolate the problem.
   c. If all the equipment seems alright, power cycle the DW6000 by unplugging the power cord from the power strip or surge protector. If this doesn't solve the issue, refer to the vendor that supplied the network equipment.
5. If the LAN LED is still not lit, try connecting the DW6000 to another computer. If the Power and LAN LEDs are lit, the problem is with your computer. If they are not lit, contact installer support.

LAN LED is lit

If the LAN LED is lit, disconnect the Ethernet cable. The LAN LED will either stay lit or go dark. Follow the appropriate instructions below.

If LAN LED stays lit

If the LAN LED stays lit, power cycle both the DW6000 and the computer by unplugging the power cords from the power strip or surge protector, waiting 10 seconds, and plugging them back in. **Do not reconnect the Ethernet cable.**

If the LAN LED is lit after the DW6000 powers back on, call installer support.

If LAN LED goes dark

1. If the LAN LED goes dark, plug the Ethernet cable back into the DW6000 Ethernet port.
2. Check the IP address assigned to the computer.
   a. In Windows, go to *Start→Run*. The Run box appears.
   b. Type **`command`** in the Open field and click **OK**. The *Command* window appears.
   c. Type **`ipconfig`** at the prompt and press Enter. Information related to the computer's network configuration appears.
   d. Check the IP Address. If the IP address is set to "0.0.0.0" or to an address that begins with "169.254", make sure the TCP/IP settings for your NIC are set to "Obtain IP address automatically". For more information, see *Configuring Windows when DHCP is enabled* on page 50.
   If the TCP/IP settings are correct, power cycle the computer; this sets the IP address correctly.
   If the ipconfig command did not display IP address information, there is probably a problem with the NIC. Refer to the manufacturer's documentation.
3. If the System Control Center is still not available, try pinging the DW6000 by entering **`ping 192.168.0.1`** at a DOS command line.
   If ping does not work, power cycle the DW6000 by unplugging it from the power strip or surge protector, waiting 10 seconds, and plugging it back in. If you still cannot ping, contact installer support.
   If the ping results show `request timed out` power cycle the unit.
   If the ping results show `Reply but from...`, check the browser settings. Make sure the dial-up connection and proxy server are not configured.
   a. In Internet Explorer go to *Tools→Internet Options→ Connections*.

b. In the Dial-up settings section, make sure Never dial a connection is selected.
c. Click on LAN Settings. The LAN Settings window appears.
d. Make sure all checkboxes are unchecked.
e. Click on OK to close all windows.

You should now be able to access the Control Center. If you cannot, contact installer support.

Device other than computer connected to DW6000

If a device other than a computer is connected to the DW6000, the Control Center is probably never accessible. However, you can still use the LED indicators to troubleshoot, as described below.

Problem: Receive LED not on

If the DW6000 is not operating normally and the receive LED is not lit, take the following steps:

- Check all cable connections. See Figure 63. Tighten any that seem loose.
- If the LED still does not come on, power cycle the DW6000 by unplugging the power cord from the wall outlet or surge protector, waiting ten seconds, and plugging it back in.
- If the problem persists, contact installer support.

Note: Often, if the Receive LED is not lit, the other LEDs will not be lit either.

Problem: System LED not lit

If the System LED is not on, but the Transmit and Receive LEDs are on, there may be a problem at the NOC. Take the following steps.

- Wait a while. If there is a problem at the NOC, it will soon be corrected and the System LED will come on. You can then resume normal operation.
- If the LED does not come on after you have waited a while, power cycle the DW6000 by unplugging the power cord from the wall outlet or surge protector, waiting ten seconds, and plugging it back in.
- If the problem persists, contact installer support.

Problem: Power LED not on

If the Power LED is not lit, take the following steps. Note that if the Power LED is not on, probably no other LEDs will be on or come on.

- Check to make sure the power cable is securely attached. See Figure 63.
- If securing the power cable does not solve the problem, check all cable connections. Tighten any that seem loose.
- If the Power LED still does not come on continuously, power cycle the DW6000 by unplugging the power cord from the wall outlet or surge protector, waiting ten seconds, and plugging it back in.
- If the problem persists, contact installer support.

Problem: Power LED blinking

If the Power LED is blinking, take the following steps.

- Check to make sure the power cable is securely attached. See Figure 63.
- If securing the power cable does not solve the problem, check all cable connections. Tighten any that seem loose.
- If the Power LED still does not come on continuously, power cycle the DW6000 by unplugging the power cord from the wall outlet or surge protector, waiting ten seconds, and plugging it back in.
- If the problem persists, contact installer support.

Glossary

D

Dotted decimal notation - An IP address consists of 32 bits. Rather than working with 32 bits at a time, it is a common practice to segment the 32 bits of an IP address into four 8-bit fields called octets. Each octet is converted to a decimal number (the Base 10 numbering system) in the range 0-255 and separated by a period (a dot).

Dynamic Host Configuration Protocol (DHCP) - a communications protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network.

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E

Enterprise - an entity autonomously operating a network using TCP/IP and in particular determining the addressing plan and address assignments within that network.

H

Host - In packet- and message-switching communications networks, the collection of hardware and software that makes use of packet or message switching to support user-to-user, i.e., end-to-end, communications, interprocess communications, and distributed data processing. More simply, any computer that has full two-way access to other computers on the Internet.

I

Internet Assigned Numbers Authority (IANA) - the organization that has overseen the allocation of Internet Protocol addresses to Internet service providers (ISPs).

Internet protocol (IP) - The method or protocol by which data is sent from one computer to another on the Internet. Each computer (known as a host) on the Internet has at least one IP address that uniquely identifies it from all other computers on the Internet. The protocol within TCP/IP that governs the breakup of data messages into packets, routing the packets from sender to destination network and station, and reassembling the packets into the original data messages at the destination.

Internet service provider (ISP) - A business that supplies Internet connectivity services to individuals, businesses, and organizations. Some ISPs are large national or multinational corporations that offer access in many locations, while others are limited to a single city or region.

IP address - a 32-bit number that identifies each sender or receiver of information that is sent in packets across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network. On the Internet itself - that is, between the router that move packets from one point to another along the route - only the network part of the address is looked at.

L

Local area network (LAN) - a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server.

N

Network Operations Center - A place from which a network is supervised, monitored, and maintained. Also referred to as the Network Management Center (NMC).

Network Address Translation (NAT)- a method of connecting multiple computers to the Internet (or any other IP network) using one IP address.

P

Performance enhancing proxy (PEP) - modules that provide TCP acceleration. PEP is used to improve the performance of the Internet protocols on network paths where native performance suffers due to characteristics of a link or subnetwork on the path.

Private IP addressing - A computer on the Internet is identified by its IP address. In order to avoid address conflicts, IP addresses are publicly registered with the Network Information Centre (NIC). Computers on private TCP/IP LANs however do not need public addresses, since they do not need to be accessed by the public. For this reason, the NIC has reserved certain addresses that will never be registered publicly. These are known as private IP addresses.

R

Router - a device or, in some cases, software in a computer, that determines the next network point to which a packet should be forwarded toward its destination.

S

Signal quality factor (SQF) - an integer value from 0-99 that indicates the strength of the received satellite signal relative to noise.

Subnet mask - a 32-bit value that is used to distinguish the network ID from the host ID in an arbitrary IP address. Each host on a network requires a subnet mask.

T

TCP/IP internet protocol suite - the basic communication language or protocol of the Internet.

TCP Acceleration - see PEP.

Transmission control protocol (TCP) - a set of rules (protocol) used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

Turbo Page - software that prefetches objects from Web sites you visit to speed up surfing.

Abbreviations and Acronyms

Abbreviation or Acronym	Term
DHCP	Dynamic Host Configuration Protocol
DVADB	DIRECWAY Virtual Private Network Automatic Dial Backup
IANA	Internet Assigned Numbers Authority
IP	Internet Protocol
ISP	Internet Service Provider
LAN	Local Area Network
NAT	Network Address Translation
NMC	Network Management Center
NOC	Network Operations Center
OPI	outdoor pointing interface
PEP	Performance Enhancing Proxy
RX	receive
SBC	satellite-based commissioning
SDL	software download
SQF	signal quality factor
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TX	transmit

Appendix A

Lat/Long Decimals to Minutes Table

Use the following procedure to determine your latitude and longitude decimal to minutes conversion when entering those items manually during commissioning.

1. Enter the whole number part of the site's longitude into the VSAT Longitude in degrees field in the **Configure Boot Parameters** screen.
2. Take the two digits immediately to the right of the longitude decimal point (without doing any rounding) and use the chart below to translate these two digits into the number of minutes.
3. Enter the minutes number into the VSAT Longitude in minutes field in the **Configure Boot Parameters** screen.
4. Repeat steps 1, 2, and 3 for the VSAT Latitude in degrees and VSAT Latitude in minutes fields.

For example, if the site's coordinates are:

Longitude: 77.2395 deg. West
Latitude: 38.8351 deg. North

You should enter:

VSAT Longitude in degrees: 77
VSAT Longitude in minutes: 14
VSAT Longitude Hemisphere (0 = East, 1 = West) <1>: 1
VSAT Latitude in degrees: 38
VSAT Latitude in minutes: 50
VSAT Latitude Hemisphere (2 = North, 3 = South) <2>: 2

Right of Decimal	Minutes	Right of Decimal	Minutes	Right of Decimal	Minutes
.01	1	**.36**	22	**.71**	43
.02	1	**.37**	22	**.72**	43
.03	2	**.38**	23	**.73**	44
.04	2	**.39**	23	**.74**	44
.05	3	**.40**	24	**.75**	45
.06	4	**.41**	25	**.76**	46
.07	4	**.42**	25	**.77**	46
.08	5	**.43**	26	**.78**	47
.09	5	**.44**	26	**.79**	47
.10	6	**.45**	27	**.80**	48
.11	7	**.46**	28	**.81**	49
.12	7	**.47**	28	**.82**	49
.13	8	**.48**	29	**.83**	50
.14	8	**.49**	29	**.84**	50
.15	9	**.50**	30	**.85**	51
.16	10	**.51**	31	**.86**	52
.17	10	**.52**	31	**.87**	52
.18	11	**.53**	32	**.88**	53
.19	11	**.54**	32	**.89**	53
.20	12	**.55**	33	**.90**	54
.21	13	**.56**	34	**.91**	55
.22	13	**.57**	34	**.92**	55
.23	14	**.58**	35	**.93**	56
.24	14	**.59**	35	**.94**	56
.25	15	**.60**	36	**.95**	57
.26	16	**.61**	37	**.96**	58
.27	16	**.62**	37	**.97**	58
.28	17	**.63**	38	**.98**	59
.29	17	**.64**	38	**.99**	59
.30	18	**.65**	39		
.31	19	**.66**	40		
.32	19	**.67**	40		
.33	20	**.68**	41		
.34	20	**.69**	41		
.35	21	**.70**	42		

Appendix B

Installing the indoor equipment using dial-up commissioning

System pre-installation

Check to be sure both you and the customer have fulfilled all system and site requirements before beginning installation.

Installation PC requirements

The installer laptop PC must fulfill the following requirements. You will receive network parameters during installation.

- Ethernet enabled network interface card (NIC) and Ethernet cable
- Windows 98 SE, Windows Me, Windows 2000, or Windows XP with TCP/IP configured to automatically obtain IP addresses. Appendix D – *Configuring the installer laptop for IP addressing,* on page 121.
- Customer PC qualification tool disk or CD.
- Dial-out modem.
- Installer software installed. See *Installing DIRECWAY installation software on installer laptop* on page 73.

Customer installation requirements

The customer must have or provide:

- Operating system
  - PC: Windows 98 SE, Windows Me, Windows 2000, Windows XP
  - MAC: 9.0 - 10.2 (excludes 10.0)
- Processor
  - PC: Pentium II 333 Mhz or faster
  - MAC: 300 Mhz or faster
- Memory
  - PC: 64MB RAM, Windows 98SE and Me; 128MB RAM Windows 2000 and XP.
  - MAC: 128MB
- Free hard drive space
  - PC: 100MB
  - MAC: 150MB

- A functioning 10/100 Ethernet interface installed on at least one computer. This is not necessary to commission the DW6000, but you must ensure the customer can surf before you leave.
- A 6-foot Cat-5 Ethernet cable is supplied to connect the DW6000 and the customer's computer. If a longer cable is needed the customer must supply it. Either crossover or straight-through Cat-5 Ethernet cable can be used.
- A power strip or surge protector. If one of these is not present, proceed with the installation using the wall outlet or other power source.
- An analog phone line.

Note: If the customer wants to connect a network to the DW6000, he or she must do so via an Ethernet hub or other such equipment. The customer must supply and configure the hub and cables. IP address information is provided during commissioning.

Note: Sometimes the unit must be configured via the Installer Console for various reasons. Only units installed for enterprise customers can be configured via the Installer Console. The installation specification will note when SBC or dial-up commissioning is not available. In those cases, follow the instructions in Appendix C – *Installing the DW6000 using Installer Console,* on page 95.

Summary of DW6000 installation process

The actual DW6000 installation is a 14-step process, beginning with the site survey and ending with completing the field service order (FSO). Refer to the appropriate antenna installation manual for those steps involving antenna installation.

1. Qualify the customer PC with the prequalification tool.
2. Conduct site survey.
3. Customer approves site survey.
4. Assemble indoor equipment. Assemble DW6000 and connect to laptop. Power DW6000 and laptop and verify connectivity.
5. Compute pointing coordinates using the DW6000 System Control Center.
6. Assemble the antenna. Pre-set elevation and polarization values.
7. Mount the satellite antenna.
8. Run cables and ground the system. Clearly label the receive and transmit coaxial cables at the antenna, ground block, and indoor unit connectors.
9. Receive point the antenna using the SBC interface.

10. Auto cross pol the antenna. When the antenna is locked in place and continues to pass isolation, finish weather sealing the coaxial cable connections.
11. Register the DW6000 using Websetup. User should be present to supply SAN and password and click to agree to subscriber agreement.
12. After verifying DW6000 has finished downloading, connect the customer's PC to it. Customer should use power strip or surge protector. Customer checks that TCP/IP setting are set to obtain an IP address automatically and restarts their computer.
13. Customer verifies connectivity by surfing to a Web site.
14. Record site ID and assigned IP address(es) for the customer on the Quick Start Guide. Clean up trash and verify connections are weather proofed. Optional: assist in customer computer configuration.
15. Complete FSO within 24 hours.

Final installation check requirements

Before leaving confirm the following items:

- *Software Download Status* in the User Interface must show "All files are up-to-date."
- The installer has surfed using the user's computer to at least the myDIRECWAY site or another Internet site *after* the *Software Download Status* shows "All files are up-to-date."
- The customer's **System Information** page printed out and the site ID, Gateway ID, and subnet mask recorded on the Quick Start Guide.Help the customer create a browser shortcut to the System Control Center. If necessary rename the shortcut "System Control Center."
- Help the customer download the DW6000 User Guide from myDIRECWAY.com.

Antenna installation

The DW6000 can be used with the HNS DW4000 74cm Two-Way antenna. The DW6000 can also be used with 98cm, 1.2m, and 1.8m antennas. Refer to the manufacturer's antenna installation manual for instructions on how to install the antenna. See the *About* section for a list of antenna installation manuals. Follow all safety procedures.

⚠ CAUTION

Professional installation and service of the antenna assembly is required by the Federal Communications Commission because the radio transmits radio frequency energy.

- **The two-way antenna assembly must be installed in a location or manner not readily accessible to children.**
- **The two-way antenna assembly must be installed at least 5 feet (1.5 meters) above ground level or any nearby surface on which a person could sit or stand.**

⚠ CAUTION

- **The two-way satellite dish assembly emits radio frequency energy when in the transmit mode.**
- **Unplug indoor power connection before performing maintenance or adding upgrades to any satellite dish components.**
- **To avoid risk of injury, do not place head or other body parts between feed horn and reflector when system is operational.**

Installing DIRECWAY installation software on installer laptop

The installation software is on a CD. The software will enable you to register DW6000 customers. You need a DW3000 or DW4000 receive modem (IRU) to install the software on your installer laptop PC.

Do not confuse the installation software with the software that is downloaded to the DW6000 via satellite during registration. The DW6000 installation software enables you to register customers and configure the DW6000 for operation. The software that actually operates the DW6000 is downloaded during registration.

Note: You only need to perform the instructions in this section one time to set up your laptop computer with the DIRECWAY installation software.

Installing the software

Do not connect USB cable to the DW4000 until prompted. You may use the cable that came with the unit, or a different cable if you need a longer one.

1. Load the installer software CD into your laptop computer. The installation wizard should appear. If it does not, select *Start—Run*, browse to the CD drive, select it, and select **setup.exe**.

Figure 57: Installation screen

2. Select **Install Software.** A Setup screen appears.
3. Select **Next**. An Agreement screen appears.
4. Select **Yes**. The Device Install Status screen in Figure 58 appears.
5. Connect the USB cable between the laptop and DW4000. The installation will complete and the Websetup Welcome screen appear. See Figure 59. If you are prompted for the location of your Windows `.cab` files, enter the location or insert your Windows installation CD, load the files, and re-insert the DIRECWAY installation CD.

   If you continue to see the Device Install Status screen, try the following:

   – Unplug the USB cable and plug it in again.
   – Verify you are using the correct power supply.
   – Try a different cable.
   – Troubleshoot your USB port or cable.
   – Try a different DW4000.
6. Select **Exit**.

Note: If you are using Windows XP as the installer laptop operating system, the laptop may reboot after you attach the USB cable. If this occurs, unplug the USB cable and repeat the installation process after the laptop reboots.

Device Installation Status
Please connect your Receive Modem to the USB port on your PC. If it is already connected, then unplug the USB cable from either your PC or the Receive Modem and plug it back in again. This will cause Windows to detect the device.
Also, ensure that all power cables are connected between your Receive Modem and your household power outlet.
After you connect your Receive Modem to your PC, Windows will automatically detect it and begin installing the appropriate device drivers. This process may take up to a minute to complete. Your PC may also stop responding during this time.
This dialog will automatically close after the Receive Modem device drivers are completely installed.
Installation Status: Installing Receive Modem device driver...
Cancel

Figure 58: Device Installation Status

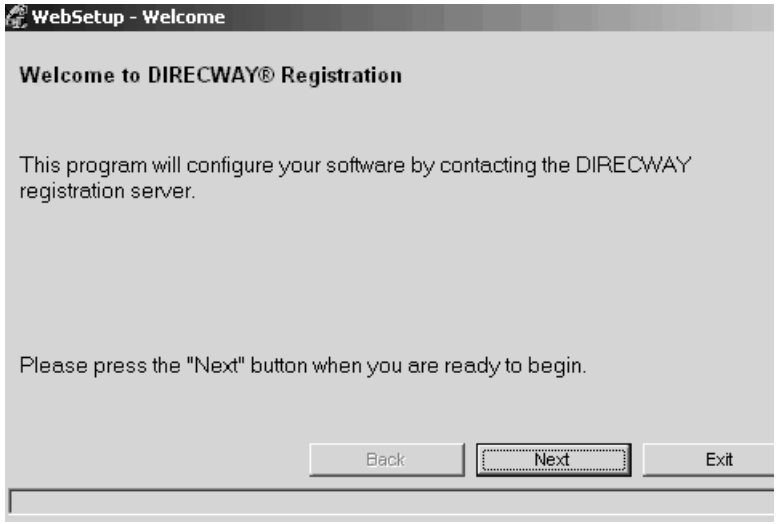
WebSetup - Welcome
Welcome to DIRECWAY® Registration
This program will configure your software by contacting the DIRECWAY registration server.
Please press the "Next" button when you are ready to begin.
Back
Next
Exit

Figure 59: Websetup Welcome screen

Installing the DW6000 using a modem

You need all the items shown in Figure 60. Everything but the Ethernet cable is in the DW6000 installation kit or inside the antenna box.

If Web commissioning is not available, you must Hyperterminal to access the installer console and use it to configure the unit. See Appendix C – *Installing the DW6000 using Installer Console,* on page 95.

You will also need the installation specification or work order. This is provided to you by HNS.

It is important to understand that there are four service options: consumer, small office/home office, enterprise, and GM Teleworker (not in use). Each option has its own registration server that appears in the Websetup Welcome screen when you start Websetup to register a customer.

You must choose the consumer option when commissioning a DW6000. If in doubt consult the work order.

For example, if you are installing a DW6000 you would double-click on the registration server for a consumer installation. If you click on one of the other servers, you will not be able to install the customer correctly.

It is also important to understand that when the Antenna Pointing screens first appear in Websetup, you must place a check in the checkbox to confirm you are performing a DW6000 installation.

Qualify customer PD with qualification tool

Insert the disk containing the customer PC qualification tool in the customer computer. Run all the checks in to tool to ensure the customer's computer is set up to work with the DW6000.

The tool does not work on a MacIntosh computer.

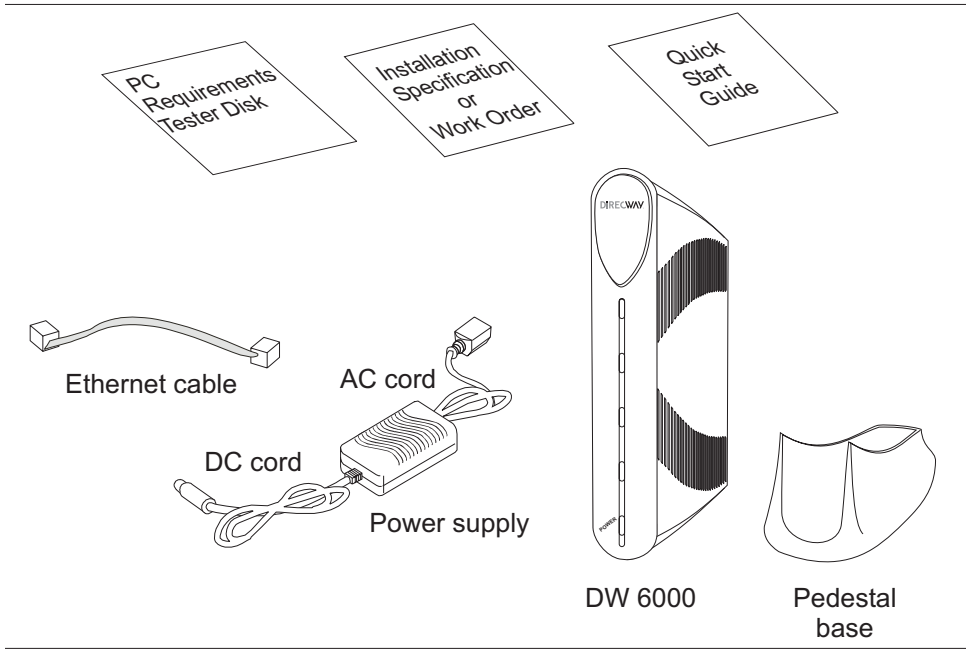

Figure 60: Items required for installation

The power supply

The DW6000 uses a power supply with the part number P/N: 1031105-0001. The part number is on a sticker on the power supply. Verify that you are using the correct power supply. Do not use anything but the power supply supplied with the DW6000 system (1031105-0001).

Be sure the power supply is labeled **ADP 64AB B** in the upper right hand corner of the label, above the bar codes. See Figure 61.

CAUTION

- **This unit's performance may suffer if the wrong power supply is used.**
- **This unit must be used with the power supply PN 1031105-0001.**
- **When power needs to be removed from the DW6000, ALWAYS unplug the AC power cord from either the wall outlet, surge protector, or power strip.**
- **NEVER pull the power cord from the back of the DW6000. Doing so could damage the pins and also cause a short in the system.**
- **Power supply with the part number 1031105-0001 is to be used only in the United States and Canada.**
- **This unit must be used with 110-volt AC input.**
- **Other countries may have different standards and requirements.**

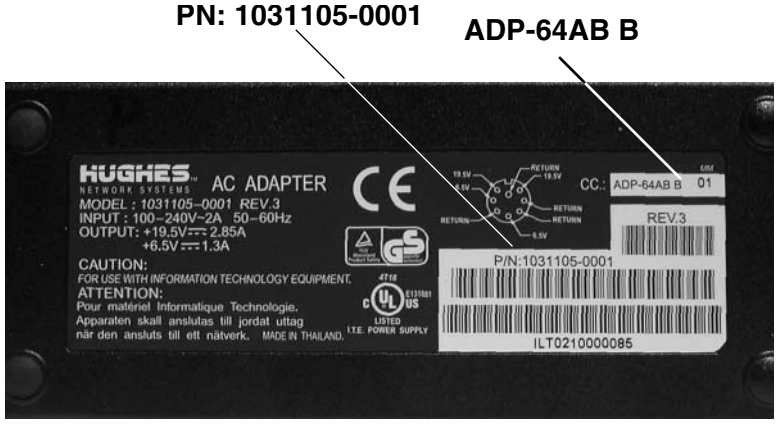

Figure 61: ADP-64AB B above bar code

Modem installation method

Follow the steps below and refer to the illustrations on page 80 through page 82 to install the DW6000.

Before beginning the installation, be sure that you have installed the installation software correctly. See *Installing the software* on page 74. In addition, confirm that TCP/IP is enabled to obtain IP addresses automatically on your installer laptop PC. See Appendix D – *on page 121*.

⚠ CAUTION

Do not connect the power supply to the DW6000, or connect the power supply to a power source, before instructed to do so.

CAUTION

- **Do not block any ventilation openings. Do not install near any heat sources such as radiators, heat registers, ovens, stoves, or other apparatus (including amplifiers) that produce heat.**
- **Recommended ventilation space around the top and sides of the DW6000 assembly should be approximately 6 inches. Ventilation is necessary to avoid overheating.**

1. Take the pedestal base in one hand the DW6000 in the other. Orient them as shown in Figure 62. The Power LED will be at the bottom.
2. The pedestal base has two curved ridges, one on each side of its opening. See Figure 63. The DW6000 has six guides that slide along these ridges. See Figure 64. Locate the ridges and the two guides at the front of the pedestal base.
3. Align the guides with the ridges.
4. Gently slide the guides along the ridges until the DW6000 clicks into place.

Note: If you need to remove the DW6000 from the pedestal base, pull up and back on the tab on the back of the base. See Figure 65. You can then slide the base off the DW6000.

Figure 62: Orienting pedestal base and DW6000

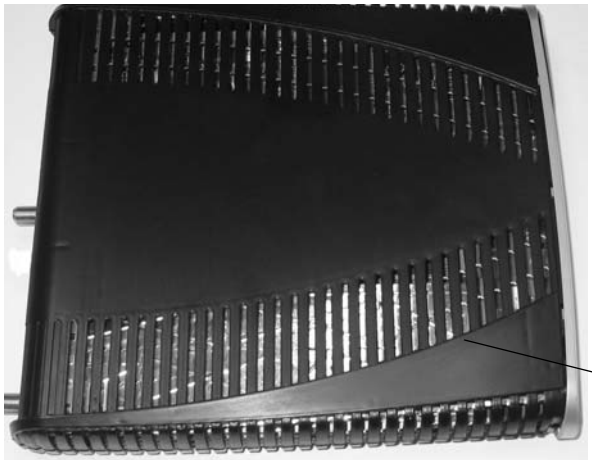

Figure 63: DW6000 guides

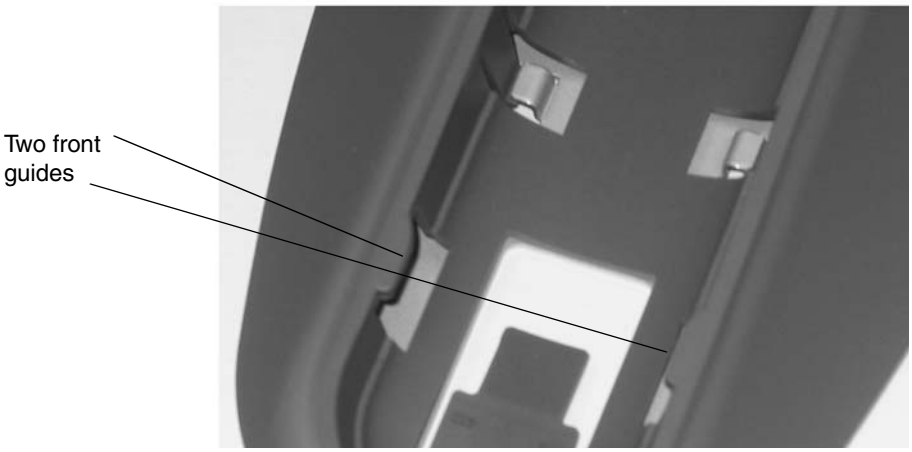

Figure 64: Two front guides

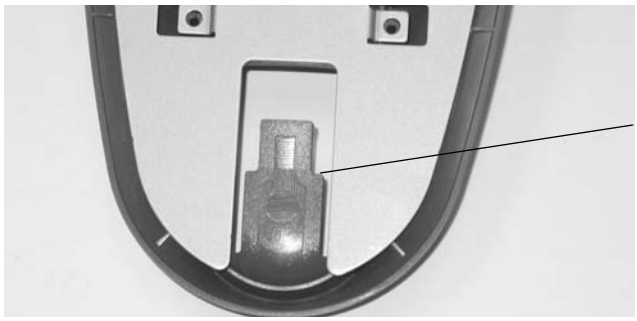

Figure 65: Pedestal base clip

5. Connect the component interconnection cables. See Figure 66 for final cabling. An Ethernet cable connects the DW6000 and the installer PC. A power supply adapter cable attaches to the DC IN port. Two coaxial cables lead to the satellite antenna; **label the transmit and receive cables but do not connect the coaxial cables at this time**.

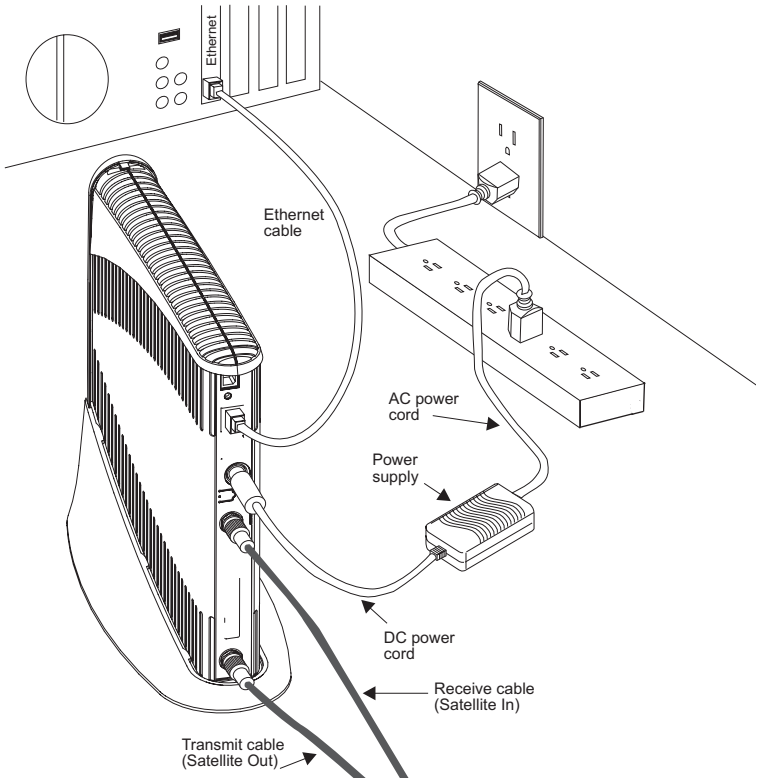

Figure 66: Attach interconnection cables

6. Attach the power supply cords to the power supply and to the power adapter. Ensure that the power cord is tightly connected to the power supply DW6000.

Power up and read the DW6000 LED display

After you connect the cables to the DW6000, connect the power strip or surge protector to a 110 V wall outlet or other power source. The DW6000 LEDs will come on in the following order:

1. Power LED comes on solid to indicate the DW6000 is powered up.

2. LAN LED comes on within 30 seconds to indicate LAN connectivity is detected.
3. Power LED starts blinking to indicate that the unit is not commissioned and therefore is running fallback.bin and not main.bin.

Note: In countries outside North America, the DW6000 may be plugged, with a physical adapter, directly into a 220 V outlet. Different countries may have different standards and requirements.

Note: Whenever the LEDs do not function properly as described below, check to be sure you have the correct power supply, PN 1031105-0001.

Obtain IP address and test Ethernet connection

1. Restart the PC so that the DW6000 assigns it an IP address. Or use the command **`ipconfig /renew`** from a DOS command line prompt.
2. The embedded DHCP server assigns IP address = 192.168.0.2 to the PC. The DW6000 Address is set to 192.168.0.1.

Make sure the PC can communicate with the DW6000 over the Ethernet connection. Enter **`Ping <192.168.0.1>`** at a DOS prompt. Figure 67 shows a successful attempt, and Figure 68 shows an unsuccessful attempt.**If the client fails to ping the host**, there are issues with either the network hardware or configuration.

```
C:\>
C:\>
C:\>ping direcwaysupport.com
Unknown host direcwaysupport.com.

C:\>
C:\>
C:\>
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms

C:\>
```

Figure 67: Successful ping

```
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  0ms, Average =  0ms
```

Figure 68: Failed ping

Running the DW6000 installation software, commissioning, and registering the customer

The DW6000 installer's computer software is basically DIRECWAY 4.0 software with some functions, such as interacting with a browser, removed. It is used to run Websetup and commission the customer.

There are four registration servers, one each for consumer, small office/home office, enterprise, and GM Teleworker. Before you select the registration server, check the work order and confirm which service option the customer has chosen.

You will register the customer, peak the satellite signal, connect the customer's DW6000, and confirm that they can surf the Internet.

1. Connect the installer laptop PC to an analog telephone line or alternate connection to the Internet.
2. Select *Start→Programs→Direcway Installer→Websetup*. The Welcome screen appears. Check the work order for the service option and highlight the proper registration server. Then select **Next.** Follow the instructions on subsequent screens; the instructions below will supplement the onscreen instructions.

   If the Welcome screen does not appear, there is a problem with the DW6000 installation. Check cable connections. If cable connections are not the problem, restart the PC. If that does not solve the problem, call installer support.

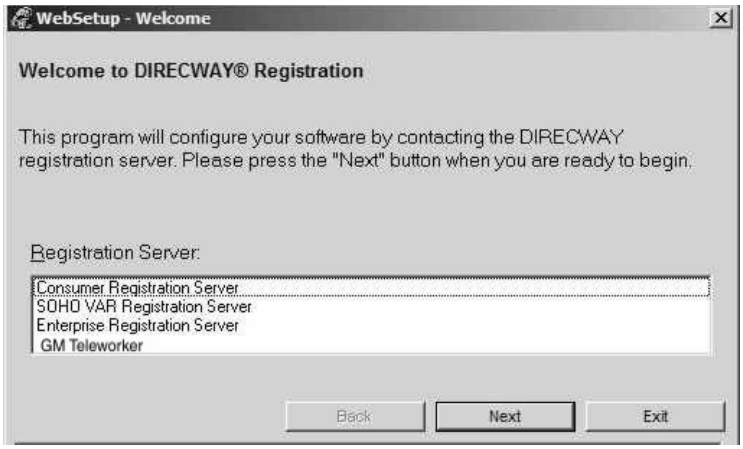
WebSetup - Welcome
Welcome to DIRECWAY® Registration
This program will configure your software by contacting the DIRECWAY registration server. Please press the "Next" button when you are ready to begin.
Registration Server:
Consumer Registration Server
SOHO VAR Registration Server
Enterprise Registration Server
GM Teleworker
Back
Next
Exit

Figure 69: Welcome screen; choose proper registration server

3. Websetup will first detect the DW6000 and the modem. See Figure 70.
4. Websetup will check for an existing connection to WebACS. Websetup may bring up a dial-up connection if necessary. See Figure 71.

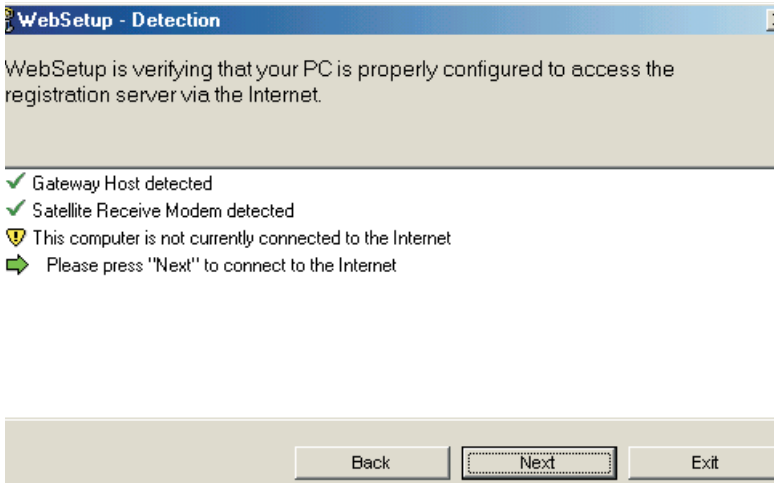
WebSetup - Detection
WebSetup is verifying that your PC is properly configured to access the registration server via the Internet.
Gateway Host detected
Satellite Receive Modem detected
This computer is not currently connected to the Internet
Please press "Next" to connect to the Internet
Back
Next
Exit

Figure 70: Websetup - Detection

WebSetup - Registration Access
Please select the dialup settings that you want WebSetup to use to connect to the registration server.
Use built-in toll-free account to connect to registration server
Use this modem to connect to the registration server
U.S. Robotics V92 Fax PCI
Back
Next
Exit

Figure 71: Dial up connection may be necessary

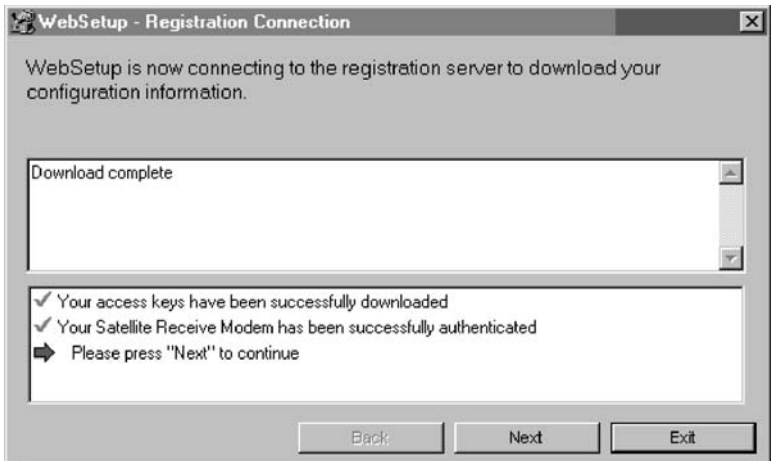
WebSetup - Registration Connection
WebSetup is now connecting to the registration server to download your configuration information.
Download complete
Your access keys have been successfully downloaded
Your Satellite Receive Modem has been successfully authenticated
Please press "Next" to continue
Back
Next
Exit

Figure 72: Registration Connection - Authentication

5. Websetup authenticates the DW6000 serial number and enables it. See Figure 72.
6. Websetup presents a series of forms to the user to complete registration. See Figure 73 through Figure 74. The appearance of the forms may vary, and the forms' content may change from time to time. For example, a SOHO customer Service Offerings screen shown in Figure 70 will be different from a consumer screen.

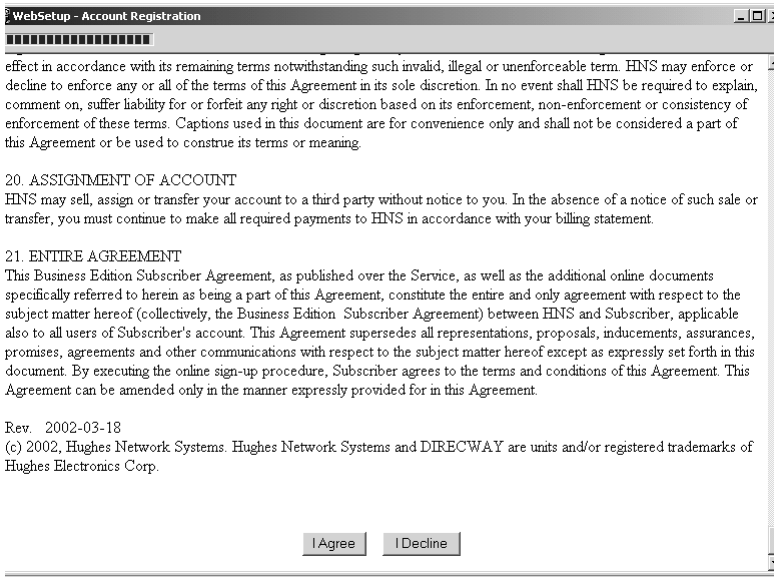
WebSetup - Account Registration
effect in accordance with its remaining terms notwithstanding such invalid, illegal or unenforceable term. HNS may enforce or decline to enforce any or all of the terms of this Agreement in its sole discretion. In no event shall HNS be required to explain, comment on, suffer liability for or forfeit any right or discretion based on its enforcement, non-enforcement or consistency of enforcement of these terms. Captions used in this document are for convenience only and shall not be considered a part of this Agreement or be used to construe its terms or meaning.
20. ASSIGNMENT OF ACCOUNT
HNS may sell, assign or transfer your account to a third party without notice to you. In the absence of a notice of such sale or transfer, you must continue to make all required payments to HNS in accordance with your billing statement.
21. ENTIRE AGREEMENT
This Business Edition Subscriber Agreement, as published over the Service, as well as the additional online documents specifically referred to herein as being a part of this Agreement, constitute the entire and only agreement with respect to the subject matter hereof (collectively, the Business Edition Subscriber Agreement) between HNS and Subscriber, applicable also to all users of Subscriber's account. This Agreement supersedes all representations, proposals, inducements, assurances, promises, agreements and other communications with respect to the subject matter hereof except as expressly set forth in this document. By executing the online sign-up procedure, Subscriber agrees to the terms and conditions of this Agreement. This Agreement can be amended only in the manner expressly provided for in this Agreement.
Rev. 2002-03-18
(c) 2002, Hughes Network Systems. Hughes Network Systems and DIRECWAY are units and/or registered trademarks of Hughes Electronics Corp.
I Agree
I Decline

Figure 73: Agreement

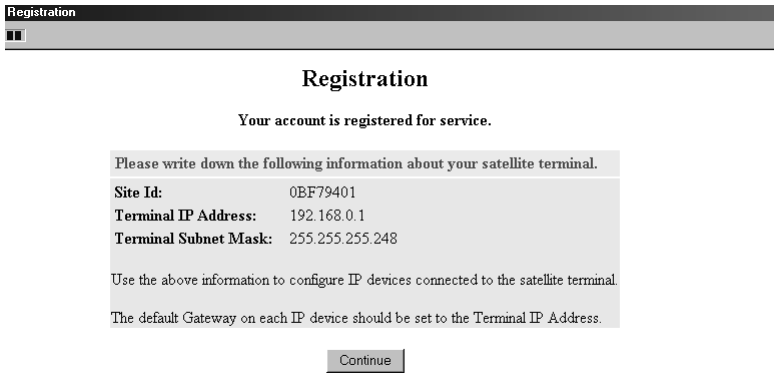
Registration
Registration
Your account is registered for service.
Please write down the following information about your satellite terminal.
Site Id: 0BF79401
Terminal IP Address: 192.168.0.1
Terminal Subnet Mask: 255.255.255.248
Use the above information to configure IP devices connected to the satellite terminal.
The default Gateway on each IP device should be set to the Terminal IP Address.
Continue

Figure 74: Registration

Note: The registration information in Figure 74 is very important. Make certain this information is recorded on the customer's Quick Start Guide. That way the customer will have important information available should their DW6000 not function and they need to call technical support.

7. After the customer enters registration information, write the information in Figure 74 on the cover of their User Guide.
8. Select Continue in the Registration screen in Figure 74. The Antenna Pointing - Antenna Location screen appears. See Figure 75.

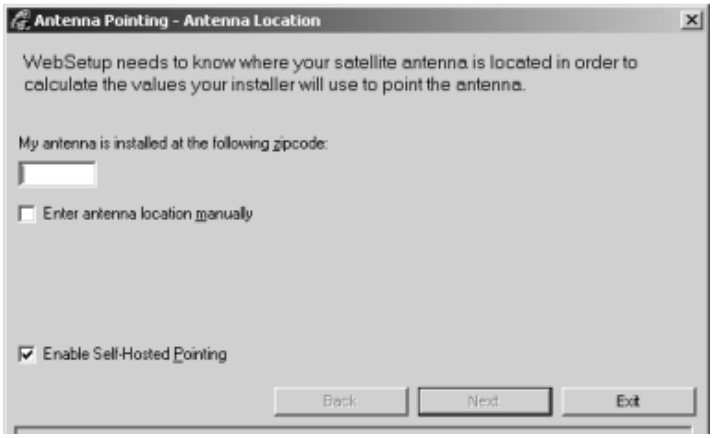
Antenna Pointing - Antenna Location
WebSetup needs to know where your satellite antenna is located in order to calculate the values your installer will use to point the antenna.
My antenna is installed at the following zipcode:
Enter antenna location manually
Enable Self-Hosted Pointing
Back
Next
Exit

Figure 75: Enter ZIP code

9. Verify that the ZIP code shown matches the ZIP code for the installation site. If not, correct it. **Place a check in the "Enable Self-Hosted Pointing" checkbox** and select **Next**. The Antenna Pointing - Receive screen appears. See Figure 76. At this point it shows no signal strength or auto cross-pol checkbox.
10. Click through all pointing screens by selecting **Next**. Click through until you reach the Websetup - Finish screen. You will finish registration before peaking the signal.

Note: You must not disconnect the power cables before completing Step 12. Finish registration before peaking the signal during post-commissioning.

11. When the Websetup-Finish screen appears, Websetup receives a parameter file from the WebACS and transfers it to the DW6000 over the Ethernet connection. If it is successful, a message appears asking you to press **Finish**. See Figure 77.
12. Select **Finish.** The unit is commissioned.

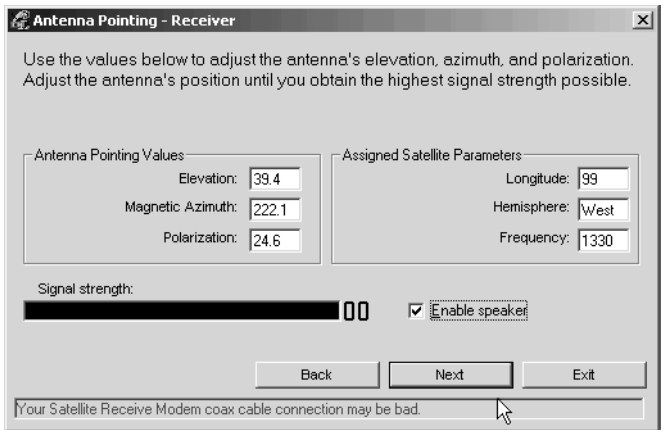

Figure 76: Antenna Pointing - Receive

WebSetup - Finish
WebSetup is now completing the configuration of your software.
Your Gateway Host has been successfully configured
WebSetup has successfully completed - Please press "Finish"
Back
Finish
Exit

Figure 77: Finish

Post-commissioning

In post-commissioning, you peak the satellite signal, attach the DW6000 to the customer computer that has a functioning Ethernet interface, and confirm the customer can surf the Internet.

Note: The satellite signal must be peaked for the maximum signal strength.

Peak the satellite signal

1. Unplug the DW6000 power cord from the wall outlet or surge protector.
2. Remove the phone line from the installer laptop PC.
3. Assemble and install the satellite antenna. This includes attaching the coaxial cables to the DW6000. Remember to label the receive and transmit cables.
4. Place the outdoor pointing interface (OPI) in the receive cable line if applicable.
5. Power on the DW6000. Select *Start→Programs→DIRECWAY Installer→Antenna Pointing.* The Antenna Pointing - Antenna Location screen appears. See Figure 78.
6. Verify the ZIP code matches the antenna location and select **Next**. The *Antenna Pointing - Satellite Parameters* screen appears. Place a check in the Enable OPI Display if you are using the OPI. Check the satellite Longitude, Hemisphere, and Frequency values. See Figure 79.

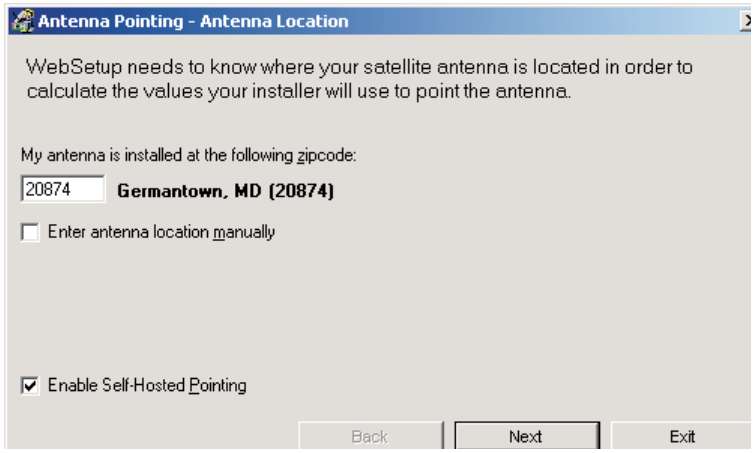
Antenna Pointing - Antenna Location
WebSetup needs to know where your satellite antenna is located in order to calculate the values your installer will use to point the antenna.
My antenna is installed at the following zipcode:
20874
Germantown, MD (20874)
Enter antenna location manually
Enable Self-Hosted Pointing
Back
Next
Exit

Figure 78: Antenna Location; verify ZIP code

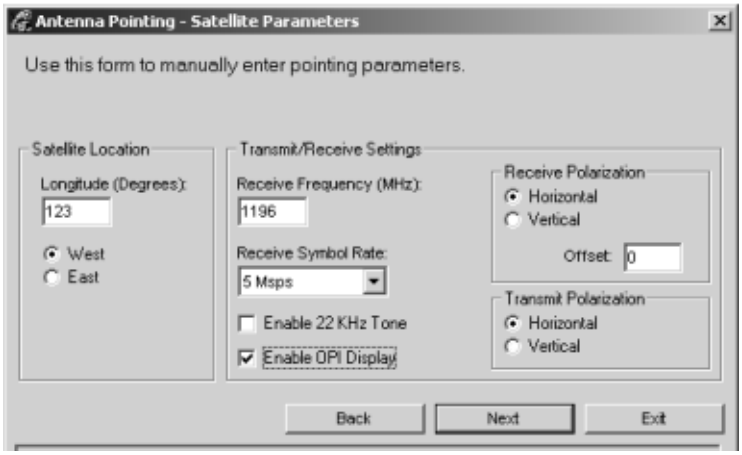

Figure 79: Antenna Pointing - Satellite Parameters

7. Use the Elevation, Azimuth and Polarization values to adjust the antenna to achieve maximum receive signal strength.
8. Select the ACP (auto cross-pol) checkbox. If it is not available, wait five minutes; the system will update.
9. Select **Next** to go to the Antenna Pointing - Transmitter screen. See Figure 80.

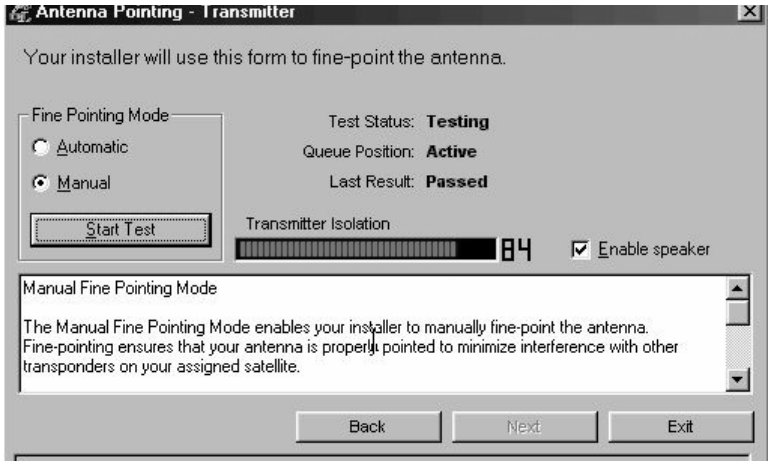
Antenna Pointing - Transmitter
Your installer will use this form to fine-point the antenna.
Fine Pointing Mode
Automatic
Manual
Start Test
Test Status: Testing
Queue Position: Active
Last Result: Passed
Transmitter Isolation
84
Enable speaker
Manual Fine Pointing Mode
The Manual Fine Pointing Mode enables your installer to manually fine-point the antenna. Fine-pointing ensures that your antenna is properly pointed to minimize interference with other transponders on your assigned satellite.
Back
Next
Exit

Figure 80: Start manual cross-pol; pass and peak isolation

10. Select the Manual fine pointing mode radio button.
11. Select **Start Test**. Adjust the antenna to achieve maximum transmit isolation.
12. When the unit consistently passes the manual transmit test, bolt the antenna securely before going to Step 13.
13. After the antenna is bolted, select Stop Test. See Figure 81.
14. Then select the Automatic radio button and select **Start Test** to start the automatic ACP test. See Figure 82.
15. Make sure the test passes.
16. Select **Exit** after passing the test.

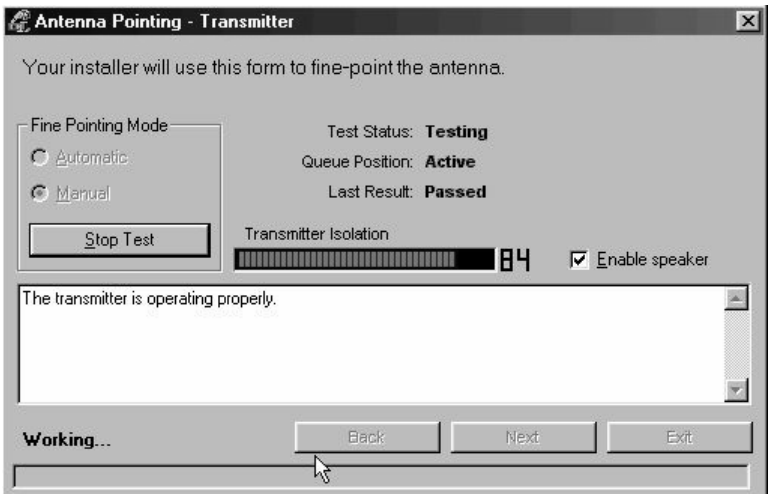

Figure 81: Manual cross-pol passed; select Stop Test

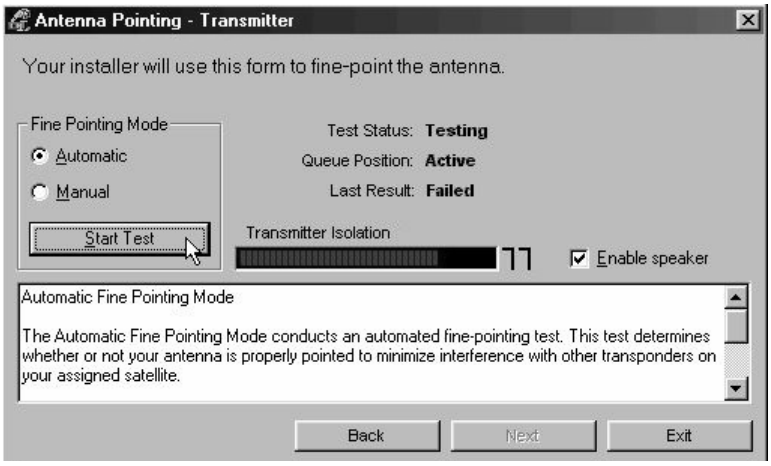
Antenna Pointing - Transmitter
Your installer will use this form to fine-point the antenna.
Fine Pointing Mode
Automatic
Manual
Start Test
Test Status: Testing
Queue Position: Active
Last Result: Failed
Transmitter Isolation
77
Enable speaker
Automatic Fine Pointing Mode
The Automatic Fine Pointing Mode conducts an automated fine-pointing test. This test determines whether or not your antenna is properly pointed to minimize interference with other transponders on your assigned satellite.
Back
Next
Exit

Figure 82: Auto cross-pol

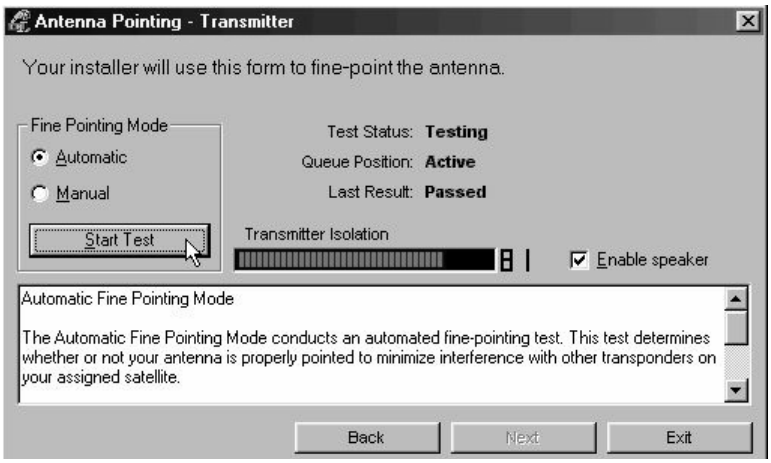
Antenna Pointing - Transmitter
Your installer will use this form to fine-point the antenna.
Fine Pointing Mode
Automatic
Manual
Start Test
Test Status: Testing
Queue Position: Active
Last Result: Passed
Transmitter Isolation
Enable speaker
Automatic Fine Pointing Mode
The Automatic Fine Pointing Mode conducts an automated fine-pointing test. This test determines whether or not your antenna is properly pointed to minimize interference with other transponders on your assigned satellite.
Back
Next
Exit

Figure 83: ACP passes; select Exit

Connect to customer computer and confirm surfing

1. Unplug the DW6000 from the wall outlet or other power source.
2. Wait 10 seconds and then plug the power cord into the wall outlet or surge protector.
3. Make sure that the LEDs function properly. Make sure the transmit and receive cables are clearly labeled at the connectors.
4. The DW6000 is now commissioned. Connect the customer's computer and the DW6000 with Ethernet cable. See Figure 84. If the computer has a functioning and properly configured Ethernet interface, it will surf the Internet. If the customer cannot surf, see the instructions below.

Refer to *Final installation check requirements on page 29* to make sure you fulfill all final installation requirements.

If the customer cannot surf

If the customer cannot surf, configure your installer laptop so its network properties match the customer's. Refer to *Appendix D* for exact instructions for setting your network properties. Then:

1. Start a Web browser on the installer laptop.
2. Enter the DW6000 IP address in the browser URL location bar and press Enter. If the DW6000 is functioning, the User Interface appears.
3. Enter an URL for a known Web site, such as abc.com or cnn.com. If it appears, the DW6000 is functioning and any problem exists on the customer's computer. The customer's network properties may not be configured properly, or there may be some other system problem. They should consult the User Guide for support information.

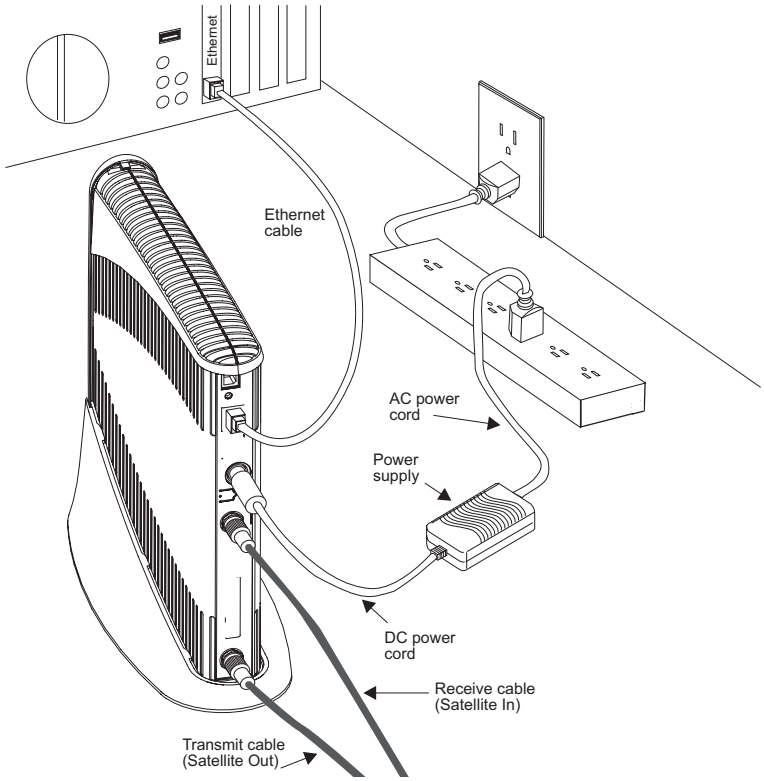

Figure 84: Final cabling

Appendix C

Installing the DW6000 using Installer Console

The installation specification may direct you to install the DW6000 using the Installer Console. You would access the console via Hyperterminal configured to use a TCP/IP connection. Follow the instructions in *Installing DIRECWAY installation software on installer laptop* on page 73.

Items needed for installation

You need all the items shown in Figure 85. Everything except the Ethernet cable is provided. You must provide an Ethernet cable. You can use either a crossover or straight-through cable. You will also need the installation specification or work order. This is provided to you by HNS.

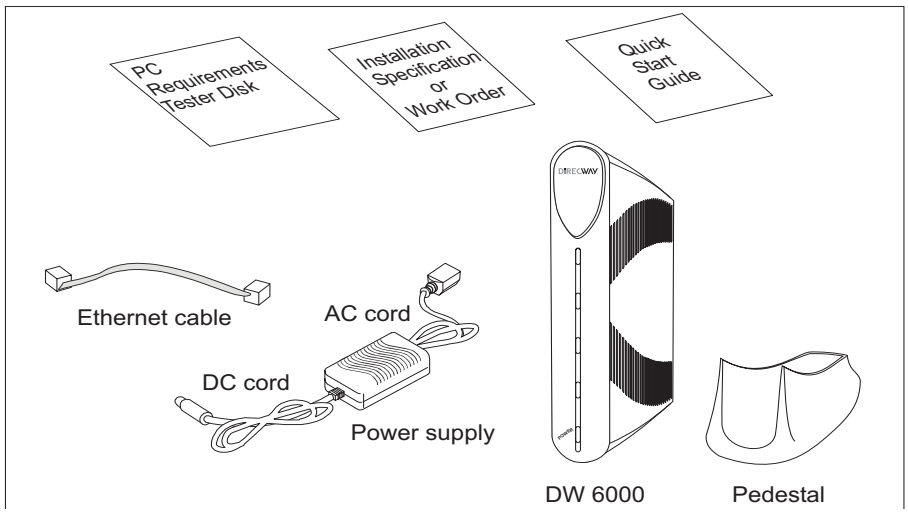

Figure 85: Items required for installation

Qualify customer PC with qualification tool

Insert the disk containing the customer PC qualification tool in the customer computer. Run all the checks in to tool to ensure the customer's computer is set up to work with the DW6000.

Installation PC requirements

The installer laptop PC must fulfill the following requirements. You will receive network parameters during installation.

- Ethernet enabled network interface card (NIC)
- Windows 98 SE, Windows Me, Windows 2000, or Windows XP with TCP/IP configured to automatically obtain IP addresses. Appendix D – *Configuring the installer laptop for IP addressing,* on page 121.

Customer installation requirements

The customer must have or provide:

- Operating system
  - PC: Windows 98 SE, Windows Me, Windows 2000, Windows XP
  - MAC: 9.0 - 10.2 (excludes 10.0)
- Processor
  - PC: Pentium II 333 Mhz or faster
  - MAC: 300 Mhz or faster
- Memory
  - PC: 64MB RAM, Windows 98SE and Me; 128MB RAM Windows 2000 and XP.
  - MAC: 128MB
- Free hard drive space
  - PC: 100MB
  - MAC: 150MB
- A functioning 10/100 Ethernet interface installed on at least one computer. This is not necessary to commission the DW6000, but you must ensure the customer can surf before you leave.
- A 6-foot Cat-5 Ethernet cable is supplied to connect the DW6000 and the customer's computer. If a longer cable is needed the customer must supply it. Either crossover or straight-through Cat-5 Ethernet cable can be used.
- A power strip or surge protector. If one of these is not present, proceed with the installation using the wall outlet or other power source.
- An analog phone line.

Note: If the customer wants to connect a network to the DW6000, he or she must do so via an Ethernet hub or other such equipment. The customer must supply and configure the hub and cables. IP address information is provided during commissioning.

The power supply

DW6000 users must use a power supply with the part number P/N: 1031105-0001. The part number is on a sticker on the power supply. Verify that you are using the correct power supply. Do not use anything but the power supply supplied with the DW6000 system (1031105-0001).

Be sure the power supply is labeled **ADP 64AB B** in the upper right hand corner of the label, above the bar codes. See Figure 86.

CAUTION

- **This unit's performance may suffer if the wrong power supply is used.**
- **This unit must be used with the power supply PN 1031105-0001.**
- **When power needs to be removed, ALWAYS unplug the AC power cord from either the wall outlet, surge protector, or power strip.**
- **NEVER pull the power cord from the back of the DW6000. Doing so could damage the pins and also cause a short in the system.**
- **Power supply with the part number 1031105-0001 is to be used only in the United States and Canada.**
- **This unit must be used with 110-volt AC input.**
- **Other countries may have different standards and requirements.**

Figure 86: PN: 1031105-0001 and ADP-64AB B above bar code

Installer console installation method

Follow the steps below and refer to the illustrations on page 99 through page 101 to install the DW6000.

In addition, confirm that TCP/IP is enabled to accept IP addresses automatically on your installer laptop PC. See Appendix D – *on page 121*.

⚠ CAUTION

Do not connect the power supply to the DW6000, or connect the power supply to a power source, before instructed to do so.

CAUTION

- **Do not block any ventilation openings. Do not install near any heat sources such as radiators, heat registers, ovens, stoves, or other apparatus (including amplifiers) that produce heat.**
- **Recommended ventilation space around the top and sides of the DW6000 assembly should be approximately 6 inches. Ventilation is necessary to avoid overheating.**

1. Take the pedestal base in one hand the DW6000 in the other. Orient them as shown in Figure 87. The Power LED will be at the bottom.
2. The pedestal base has two curved ridges, one on each side of its opening. See Figure 88. The DW6000 has six guides that slide along these ridges. See Figure 89. Locate the ridges and the two guides at the front of the pedestal base.
3. Align the guides with the ridges.
4. Gently slide the guides along the ridges until the DW6000 clicks into place.

Note: If you need to remove the DW6000 from the pedestal base, pull up and back on the tab on the back of the base. See Figure 90. You can then slide the base off the DW6000.

Figure 87: Orienting pedestal base and DW6000

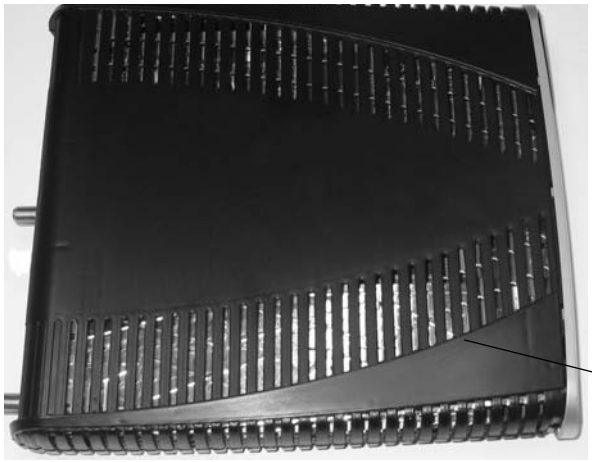

Figure 88: DW6000 guides

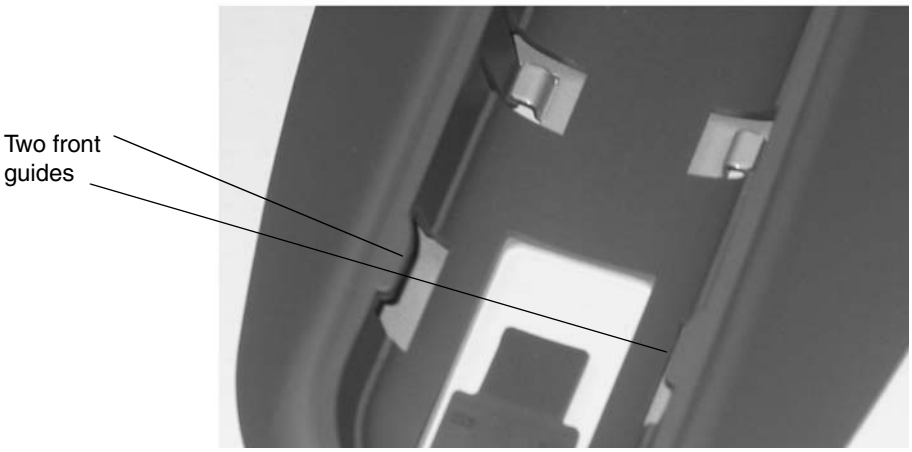

Figure 89: Two front guides

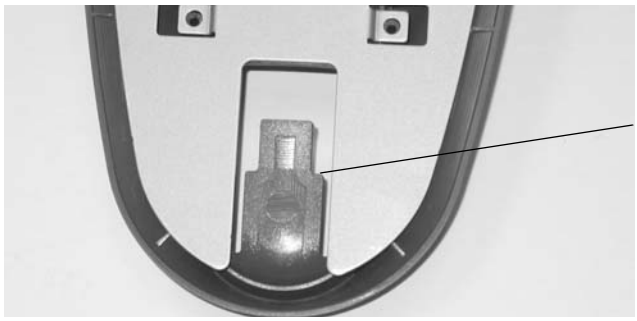

Figure 90: Pedestal base clip

5. Connect the component interconnection cables. See Figure 91 for final cabling. An Ethernet cable connects the DW6000 and the installer PC. A power supply adapter cable attaches to the DC IN port. Two coaxial cables lead to the satellite antenna; **do not connect the coaxial cables at this time**.

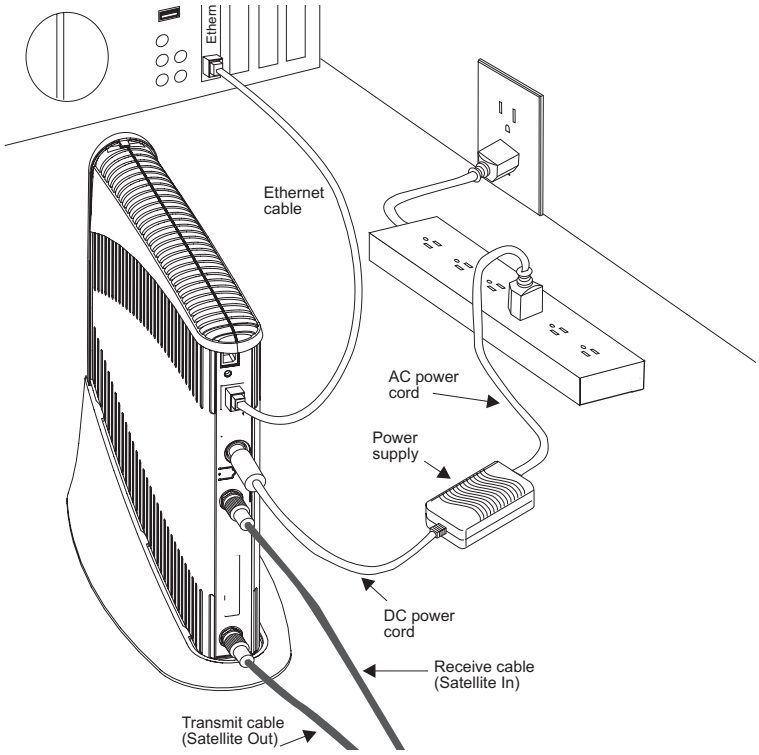

Figure 91: Attach interconnection cables

6. Attach the power supply cords to the power supply and to the power adapter. Ensure that the power cord is tightly connected to the power supply DW6000.

Power up and read the DW6000 LED display

After you connect the cables to the DW6000, connect the power strip or surge protector to a 110 V wall outlet or other power source. The DW6000 LEDs will come on in the following order:

1. Power LED comes on solid to indicate the DW6000 is powered up.

2. LAN LED comes on within 30 seconds to indicate LAN connectivity is detected.
3. Power LED starts blinking to indicate that the unit is not commissioned and therefore is running fallback.bin and not main.bin.

Note: In countries outside North America, the DW6000 may be plugged, with a physical adapter, directly into a 220 V outlet. Different countries may have different standards and requirements.

Note: Whenever the LEDs do not function properly as described below, check to be sure you have the correct power supply, PN 1031105-0001.

Obtain IP address and test Ethernet connection

1. Restart the PC so that the DW6000 assigns it an IP address. Or use the command **`ipconfig /renew`** from a DOS command line prompt.
2. The embedded DHCP server assigns IP address = 192.168.0.2 to the PC. The DW6000 Address is set to 192.168.0.1.

Confirm the PC can communicate with the DW6000 over the Ethernet connection. Enter **`Ping <192.168.0.1>`** at a DOS prompt. Figure 92 shows a successful attempt, and Figure 93 shows an unsuccessful attempt. **If the client fails to ping the host**, issues exist with the network hardware or configuration.

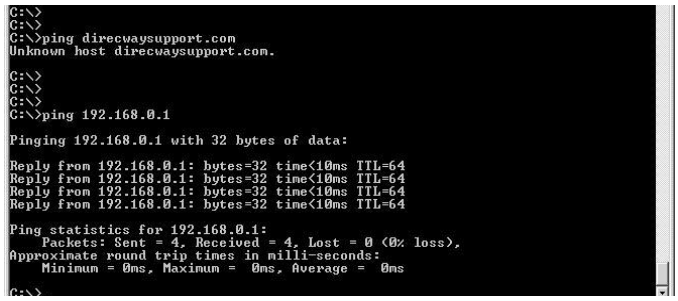

Figure 92: Successful ping

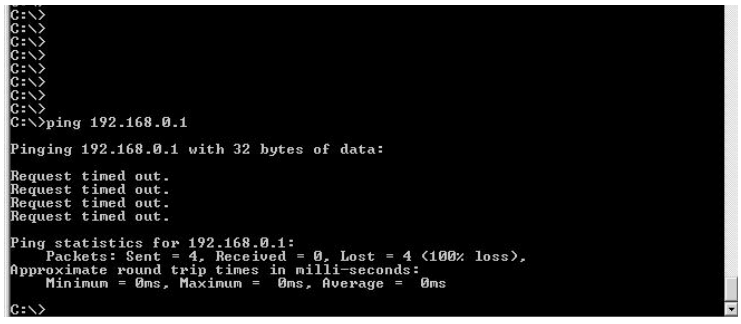

Figure 93: Failed ping

Communicating with the DW6000 via Hyperterminal

After the DW6000 finishes the LED sequence, you will use a laptop PC to communicate with the DW6000 via Hyperterminal through the Ethernet connection. (You can also use a desktop PC.) You access the Boot Parameters screen and set the parameters. You also point and cross-pol the antenna. In order to complete the parameters, you will need your installer ID and the information shown in Figure 102 on page 109.

1. Connect to the Installer Console with Hyperterminal.
   a. Launch HyperTerminal. The *Connection Description* window appears. See Figure 94.
   b. Type **`DW6000`** in the Name field and click **OK**. The *Connect To* window appears. See Figure 95.
      – Enter **`192.168.0.1`** in the Host address field.
      – Enter **`1953`** in the Port number field.
      – Click on the Connect Using pull-down menu and select TCP/IP (Winsock).
   c. Click **OK**. If the DW6000 unit is connected to your PC via Ethernet the Main Menu appears in the HyperTerminal window.

Figure 94: Connection Description

Figure 95: Connect To

d. Go to *File→Properties*. The *New Connection Properties* window appears.
e. Click the Settings tab. See Figure 96.
f. Click **ASCII Setup**. The ASCII Setup window appears. See Figure 97.
g. Place a check in the Echo Typed Characters Locally checkbox.
h. Click **OK** twice to close the *Properties* window. The HyperTerminal session is set up.

Note: When you are finished with a HyperTerminal session, enter **z** in the Main Menu to close the session on the DW6000. DO NOT close HyperTerminal without ending the session on the DW6000. If you do, the unit will freeze for a few minutes.

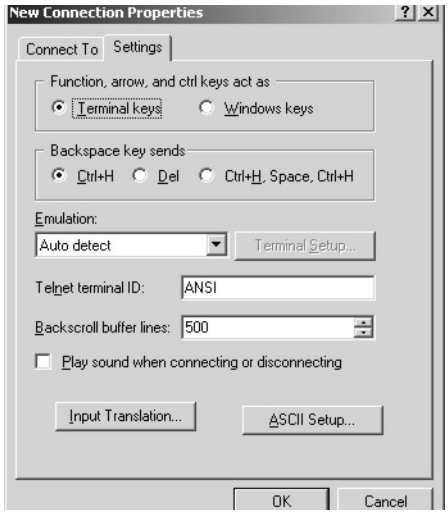

Figure 96: DW6000 Properties, Settings tab selected

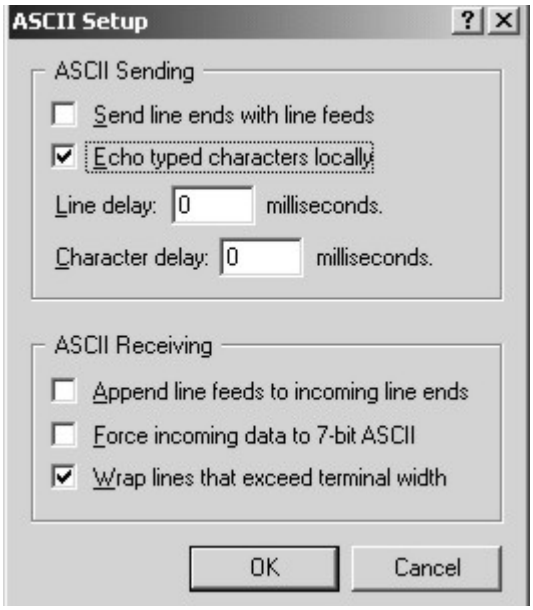

Figure 97: ASCII Setup

2. Press **ENTER** to display the initial Install Console screen shown in Figure 98.

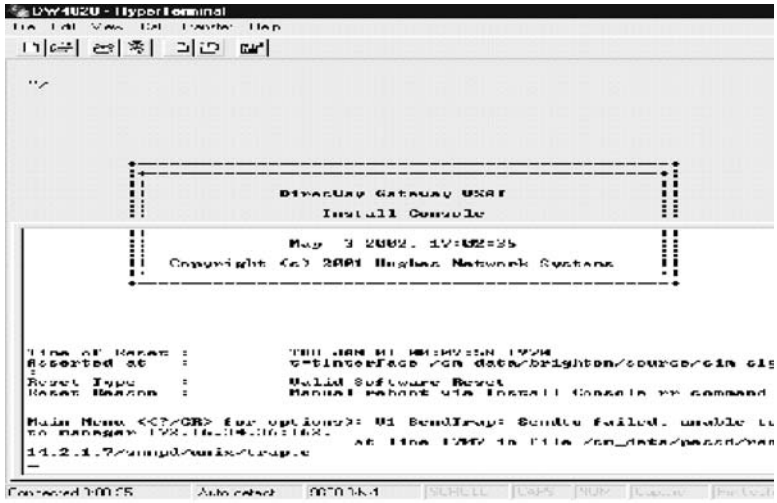

Figure 98: Initial Install Console screen

3. Press **ENTER** to display the **Main Menu** shown in Figure 99.

```
Main Menu:
  (a)  Configure Boot Parameters
  (b)  Display Current Configuration
  (c)  Display Satellite Interface Statistics
  (d)  Display Active Routing Table
  (f)  Run Software Download Monitor
  (h)  Display Reset History
  (i)  Installation

  (t)  Run Final/Built-in Tests

  (pc) (Parameter Clear)     Clear Configuration
  (pw) (Parameter Write)     Write Configuration
  (rr) (DW6000 Reset)       Reset the DW6000
  (rd) (DW6000 Deconfigure) Force Download and
Acquire New Keys
```

Figure 99: BOOT ROM installer console Main Menu

4. Enter **c** to display the **Satellite Interface Statistics** menu (see Figure 100).

```
Main Menu (<?/CR> for options): c

Satellite Interface Stats Menu:
  (a) Display Main Statistics.
  (b) Clear Statistics.
  (c) Display Satellite Interface Serial Number.
  (d) Display Signal Quality Factor.
  (g) Display PEP Statistics.
  (z) Return to Main Menu.

Satellite Interface Stats Menu (<?/CR> for options): c


Satellite interface serial number: 647938
```

Figure 100: Satellite Interface Statistics menu with Display Satellite Interface Serial Number displayed

5. Enter **c** to display the satellite interface serial number (see Figure 100).
   If the electronic serial number is different from the barcode serial number or the serial number on your work order, call the installer hotline for the DW6000 series and request the serial number be corrected. You must supply the Site/Master account number that can be found on the work order. Also observe all cautions in the Caution box below.
6. Enter **z** to return to the **Main Menu**.

CAUTION

- **You must confirm the electronic serial number through the serial connection when configuring the DW6000.**
- **If the electronic serial number is different from the barcode serial number or the serial number on your work order, call the installer hotline for the DW6000 series and request the serial number be corrected. You must supply the Site/Master account number that can be found on the work order.**

⚠ CAUTION

Use only "z" in the Main Menu to break the connection between the DW6000 and the laptop.

Configuring Boot Parameters

Use Configure Boot Parameters to configure the DW6000 for outroute reception and downloading of software. For initial installation, most parameters must be entered, except for VSAT Return Path, which is always “Inroute.”

Thus, you will need your installer ID, and you will need all necessary information to enter data for the fields marked with an asterisk in Figure 102. One asterisk means the installer must provide or obtain the information; two asterisks means the information is global for all installations. Refer to Appendix A for information on how to determine how to convert degrees/decimal values to degree/minutes values.

Note: Two good Web sites for determining your latitude and longitude include: http://www.zipinfo.com/search/zipcode.htm and http://www.census.gov/cgi-bin/gazetteer

Note: If you will be using the Outdoor Pointing Interface (OPI) device, remember that the LNB 22KHz Switch parameter must be set to "OFF" to enable the device. You may leave the parameter at OFF for the rest of the installation. The instructions below describe how to set parameters.

1. Enter **a** at the **Main Menu** prompt. Each parameter shown in Figure 102 appears, one at a time, one line at a time. For example, the first parameter to appear after you enter **a** is the VSAT Return Path Parameter, as shown in Figure 101.

.

```
VSAT Return Path (1 = Receive Only, 2 = Inroute, 3 = LAN) <2>:
```

Figure 101: VSAT Return Path Parameter

All the parameters are shown in the *Display Current Configuration* screen in Figure 102. The screen is displayed by entering **b** at the **Main Menu** prompt.

```
Creation Date:                          Feb  8 2002, 11:43:08
Current DW6000 Image Executing:        Main.bin
IRU Software Version Number:            33
=========================================================================
Parameter                               Value entered     Value in use
-------------------------------------   --------------    ------------
VSAT Return Path:                       **Inroute           Inroute
Satellite Longitude in degrees:         **117               117
Satellite Longitude in minutes:         **0                 0
Satellite Hemisphere:                   **West              West
VSAT Longitude in degrees:              *77                77
VSAT Longitude in minutes:              *10                10
VSAT Longitude Hemisphere:              *West              West
VSAT Latitude in degrees:               *39                39
VSAT Latitude in minutes:               *10                10
VSAT Latitude Hemisphere:               *North             North
Satellite Channel Frequency:            *11100 (x 100Khz)  11100 (x 100Khz)
Receive Symbol Rate:                    *30000000 Sps      30000000 Sps
LNB Polarization:                       *Vertical          Vertical
LNB 22KHz Switch:                       *On                On
Filter Rolloff:                         *20                20
LAN1 IP Address:                        *66.82.56.50       66.82.56.50
LAN1 Subnet Mask:                       *255.255.255.240   255.255.255.240
IP DW6000 IP Address:                  *66.82.24.154      66.82.24.154
SDL Control Channel Multicast Address:  *224.0.1.4         224.0.1.4
VSAT Management IP Address:             *10.0.0.0          10.0.0.0
Default Router IP Address:              10.0.0.10         10.0.0.0
Main Menu (<?/CR> for options):
```

Figure 102: Display Current Configuration Screen

2. As each one-line parameter appears, enter the specific values as defined in the installation specification for this customer or as specified by HNS personnel and press **ENTER**. The next parameter will then appear.

   Type **–** and press **ENTER** at the prompt to go to the previous parameter. You can also skip the remaining parameters by typing **** and pressing **ENTER**.

Note: The Default Router Address isn't used in most cases and doesn't have to be configured. The VSAT Return Path should be configured to "Inroute."

Note: The values in the examples are for illustrative purposes only. Do not use them to configure the DW6000.

3. When you have entered all parameters, return to the **Main Menu** and enter **pw**. This saves the configuration parameters to the flash memory. At this point, depending on the parameters that were modified, the DW6000 may reset.
4. A message `Writing the configuration -are you sure (y/n)` appears. Enter **y**. At this point, depending on the parameters that were modified, the DW6000 should reset. If it does not reset, enter **rr** to do a DW6000 reset.
5. At the **Main Menu** prompt, enter **b** to display the current configuration. The display is similar to the one shown in Figure 102. Verify the parameter values and match them to the installation or NOC specification.

The Installation Menu

After you have entered the boot parameters, use the **Installation Menu** to receive and transmit point the antenna. Transmit pointing uses both an automatic and manual mode.

The Outdoor Pointing Interface (OPI) device can also be used to point an antenna used with a DW6000. Follow the instructions in the ***Outdoor Pointing Interface Operating Instructions*** (HNS 1031832-0001).

Note: Remember that if you use the OPI, the LNB 22KHz Switch parameter must be set to "OFF." You may leave the parameter set at "OFF" for the rest of the installation.

Note: Remember that if you wish to exit the Installation Menu and return to the Main Menu, you must type "**z**" and press **ENTER**. If you don't you'll remain in one of the Installation submenus until you do so.

⚠ CAUTION

- **The two-way satellite dish assembly emits radio frequency energy when in the transmit mode.**
- **Unplug indoor power connection before performing maintenance or adding upgrades to any satellite dish components.**
- **To avoid risk of injury, do not place head or other body parts between feed horn and reflector when system is operational.**

Antenna Pointing - Receiver This section describes how to verify adequate receive signal reception, that is, with a signal quality factor (SQF) of over 30.

1. Enter **`i`** at the **Main Menu** prompt. The **Installation Menu** appears (see Figure 103). Enter either your installer ID number or <CR>, which defaults to a valid installer ID, to access the submenus. If automatic cross-polarization (ACP) is not available, `"Transmitter, Automatic (not available"` will appear in the menu.

```
Installation Menu:
  (a) Antenna Pointing - Receiver
  (b) Antenna Pointing - Transmitter, Automatic
  (c) Antenna Pointing - Transmitter, Manual
  (d) Verify Ranging
  (z) Return to Main Menu
```

Figure 103: Installation Menu

2. At the **Installation Menu** prompt, enter **a** to obtain antenna pointing values and assigned satellite parameters. The *Antenna Pointing - Receiver* screen in Figure 104 appears.

DW4820 - HyperTerminal
File Edit View Call Transfer Help
VSAT Longitude Hemisphere: West West
VSAT Latitude in degrees: 39 39
VSAT Latitude in minutes: 0 0
VSAT Latitude Hemisphere: North North
Satellite Channel Frequency: 11100 (x 100Khz) 11100 (x 100Khz)
Receive Symbol Rate: 30000000 Sps 30000000 Sps
LNB Polarization: Vertical Vertical
LNB 22KHz Switch: On On
Filter Rolloff: 35 35
LAN1 IP Address: 66.82.133.185 66.82.133.185
LAN1 Subnet Mask: 255.255.255.248 255.255.255.248
IP Gateway IP Address: 66.82.24.32 66.82.24.32
SDL Control Channel Multicast Address: 224.0.1.6 224.0.1.6
VSAT Management IP Address: 10.248.1.27 10.248.1.27
Default Router IP Address: 10.0.0.0 10.248.1.27
Main Menu (<?/CR> for options)> i
Enter Installer ID:
Will use default installer ID...
Installation Menu:
(a) Antenna Pointing - Receiver
(b) Antenna Pointing - Transmitter, Automatic
(c) Antenna Pointing - Transmitter, Manual
(d) Verify Ranging
(z) Return to Main Menu
Installation Menu (<?/CR> for options)> a
Antenna Pointing Values
Elevation Angle in degrees : 29.1
Magnetic Azimuth Angle in degrees : 346.7
Polarization Angle in degrees : 38.4
Assigned Satellite Parameters:
Longitude in degrees : 117
Longitude in minutes : 0
Frequency in 100MHz : 11100
Press <CR> to return to the menu
SQF: 78

Figure 104: Antenna Pointing - Receiver

The SQF represents the strength of the received signal relative to noise. SQF is an integer value between 0 and 99. The SQF value is interpreted as follows:

- **0-29.** The receive modem is **not** locked onto the desired signal. The value increases as the DW6000 receives stronger signal power.
- **31-99.** The receive modem is locked onto the desired satellite signal.
- **30.** The receive modem is locked onto a satellite signal, but is waiting for a message confirming that it is locked to the correct signal. An unchangeable value of 30 indicates that the receive modem is locked onto a wrong signal.

3. If the SQF is less than 30, refine the antenna pointing to bring the SQF over 40 and to as close to 99 as possible. The SQF message updates automatically. There is a delay of up to 10 seconds between the displayed and the current SQF value.
4. If you cannot achieve a satisfactory SQF, take the steps below in the order suggested until the situation is corrected.
   a. Check for unobstructed view to the satellite.
   b. Refine antenna aiming.
   c. Check LNB polarization.
   d. Check receive symbol rate.
   e. Replace LNB.
   f. Replace entire DW6000 unit.

Antenna Pointing - Transmitter, Manual

The manual cross-polarization function can be used to adjust the antenna and peak the antenna's transmit polarization for maximum isolation. You can also use manual pointing to adjust polarization after failing the automatic cross-polarization test.

1. Enter **c** at the **Installation Menu** prompt. The *Antenna Pointing - Transmitter, Manual* screen appears.
   Otherwise, the screen shows the current queue position until the test can be run. When the Test Status field shows `Active` the test can be run. The result of the test is shown in the Result: field, where a transmitter isolation value is reported.
2. Make small, one-degree or less changes in polarization while observing the transmitter isolation. Peak the transmitter to the highest possible transmitter isolation value.
3. Press **Enter** to return to the **Installation Menu**.

Antenna Pointing - Transmitter, Automatic

Automatic cross-polarization (ACP) is used for a rapid Pass/Fail test of the antenna's transmit polarization adjustment. If you pass ACP the unit is enabled and no further antenna pointing is needed.

1. Enter **b** at the **Installation Menu** prompt. The *Antenna Pointing - Transmitter, Automatic* screen appears.
   Otherwise, the screen shows your current queue position until the test can be run. (Sometimes a number of installers will be pointing their antennas at the same time. You may have to wait for the test to be run, and are placed in a queue until it can be run.)
   The result of the test is shown in the Result: field. `PASS` means the transmit modem will be enabled and the system should be operational. `FAIL` means the transmit modem will be disabled and the dish pointing needs to be checked.
2. Whether you pass or fail, press **Enter** to return to the **Installation Menu**.
3. Enter **z** to return to the **Main Menu**.
4. At the **Main Menu** enter **c**. The **Satellite Interface Statistics Menu** appears (see Figure 105).
5. Enter **a**. The *Display Main Statistics* screen appears. Confirm the SQF is greater than 31 and that the transmitter is available.
6. Enter **z** to return to the **Main Menu**.

CAUTION

Any time you enter the DW6000 Installation Menu, the transmitter is turned off for safety reasons. Do not enter "i" to access the Installation Menu after this point unless instructed to do so by a technician at the NOC.

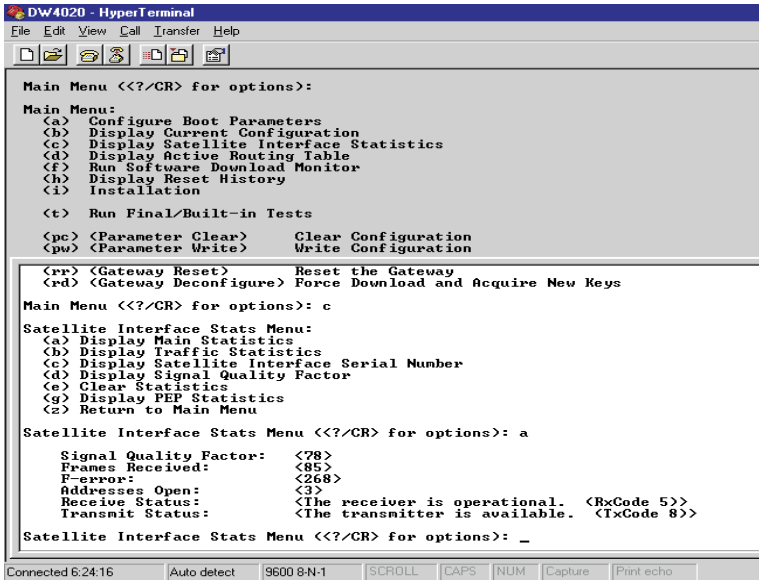
DW4020 - HyperTerminal
File Edit View Call Transfer Help
Main Menu (<?/CR> for options):
Main Menu:
(a) Configure Boot Parameters
(b) Display Current Configuration
(c) Display Satellite Interface Statistics
(d) Display Active Routing Table
(f) Run Software Download Monitor
(h) Display Reset History
(i) Installation
(t) Run Final/Built-in Tests
(pc) (Parameter Clear) Clear Configuration
(pw) (Parameter Write) Write Configuration
(rr) (Gateway Reset) Reset the Gateway
(rd) (Gateway Deconfigure) Force Download and Acquire New Keys
Main Menu (<?/CR> for options): c
Satellite Interface Stats Menu:
(a) Display Main Statistics
(b) Display Traffic Statistics
(c) Display Satellite Interface Serial Number
(d) Display Signal Quality Factor
(e) Clear Statistics
(g) Display PEP Statistics
(z) Return to Main Menu
Satellite Interface Stats Menu (<?/CR> for options): a
Signal Quality Factor: <78>
Frames Received: <85>
F-error: <268>
Addresses Open: <3>
Receive Status: <The receiver is operational. <RxCode 5>>
Transmit Status: <The transmitter is available. <TxCode 8>>
Satellite Interface Stats Menu (<?/CR> for options): _
Connected 6:24:16 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 105: Display Main Statistics

Force ranging Use the **d** option to force-range the unit and verify the ranging status. The status must indicate “Transmitter available for normal operation” if ranging completes successfully.

Ranging must be done before you exit the **Installation Menu.**

Verifying software download

If the DW6000 is configured correctly for outroute reception and SQF is greater than 30, it will acquire the outroute. As soon as the DW6000 acquires the outroute, it begins to look for messages from the Software Download server in the data stream to perform software download.

1. To monitor software download (SDL) progress, enter **f** at the **Main Menu** prompt to select *Software Download Monitor*.
2. The following message is displayed at the bottom of the screen:

```
SDL Initialization complete. Awaiting first heartbeat msg.
```

This message is dynamically updated. It indicates that SDL has started and is waiting to connect with the SDL server.

Note: It may be 20 minutes before the first heartbeat message is received.

3. If SDL does not progress beyond this message, check the following:

- The SDL control channel's multicast IP address
  - Return to the **Main Menu**.
  - Enter **b** to view the current configuration
  - Check that the SDL Control Channel Multicast Address is correct. If not, enter the correct address.
- The **LED** lights to ensure they are on. See *Power up and read the DW6000 LED display* on page 101 and *Communicating with the DW6000 via Hyperterminal* on page 103.

4. When the DW6000 receives a message from the SDL server, the following message is displayed:

```
Received first heartbeat message.
```

5. If there is no progress beyond this message, check the return path. When operating normally, the following message is displayed:

```
Received File/Group message. Reconciling files...
MM loading...
IP loading...
...
All files downloaded. Notifying CFM.
```

6. On successful download, the DW6000 automatically resets to reflect the new software. The new configuration takes effect.

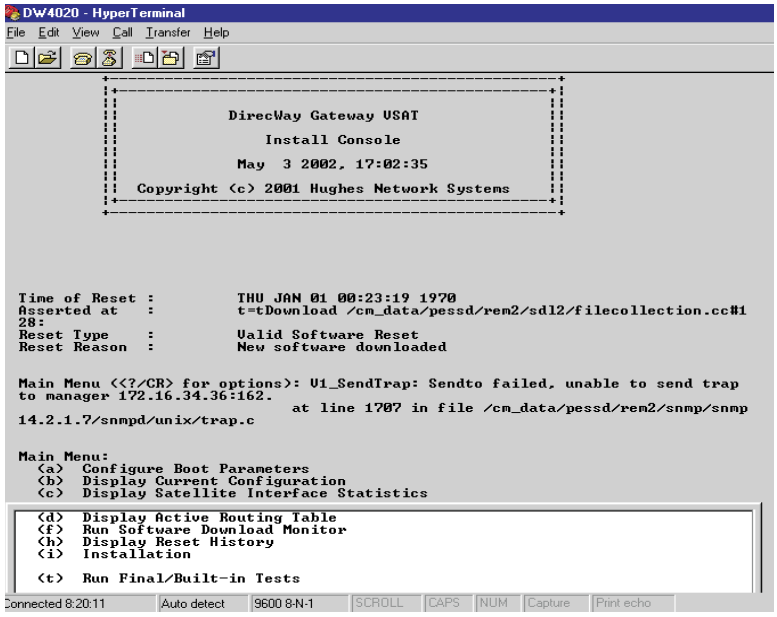

Figure 106: DW6000 reset

7. At the **Main Menu** prompt, select **f** to monitor SDL progress. The following messages are displayed:

```
SDL Initialization complete. Awaiting first heartbeat msg.
Received first heartbeat message.
All files downloaded. No pending changes.
```

The DW6000 may now be hooked up to either a configured PC or network.

DW6000 status information via the Installer Console

The DW6000 has no serviceable parts. However, you may be able to debug units with help from installer support. Although you access the menus below via the Installer Console, if the DW6000 LED lights are functioning you should be able to troubleshoot using the instructions in the System Control Center and troubleshooting chapters.

Verifying correct DW6000 operation

You can verify that the DW6000 unit is receiving and processing data by following the steps given below.

1. Enter **C** at the Main Menu to access **Satellite Interface Statistics**.
2. At the Satellite Interface Stats submenu enter **a** to select **Display Main Statistics**. In the display that appears (see Figure 107), check if frames are being accepted.

```
Signal Quality Factor:   <83>
    Frames Received:         <181>
    F-error:                 <0>
    Addresses Open:          <2>
    Receive Status:          <The receiver is operational.  (RxCode 5)>
    Transmit Status:         <The transmitter is available.  (TxCode 8)
```

Figure 107: Display Main Statistics

The Frames Received and F-error values indicate the DW6000 is detecting frames and correctly receiving and demodulating an outroute signal.

Note the Signal Quality Factor is also reported; if the SQF is below 31, the antenna must be repointed.

The Receive Status and Transmit Status fields report whether the receive and transmit modems are operational. If they are not operational or available, antenna pointing is not possible.

Displaying traffic statistics

At the Satellite Interface Statistics submenu enter **b** to select **Display Traffic Statistics**. The screen in Figure 108 appears.

```
aam info
-------------------------------------------------------
state               dpcmac   ethmac       key
------------------ -------- ------------ ----------------
ADDR_RESERVED  (4) 5E6EEFEF 01005E6EEFEF 0000000000000000
ADDR_UNICAST   (8) 0A0B36E3 02000A0B36E3 DFCFA55F949BA608
ADDR_CLOSED    (5) 5E000104 01005E000104 0000000000000000
MacAdrs      RxOk       RxCrc      RxLost     BadKey
------------ ---------- ---------- ---------- ----------
000000000000 0000000000 0000000000 0000000000 0000000000
02000A0B36E3 0000000171 0000000000 0000000000 0000000000
01005E6EEFEF 0000000012 0000000000 0000000000 0000000000
030001000009 0000007651 0000000000 0000000000 0000000000
030001020000 0000000476 0000000000 0000000000 0000000000
030001010000 0000001419 0000000000 0000000000 0000000000
```

Figure 108: Display Traffic Statistics screen

Displaying PEP statistics

To check performance enhancing proxy (PEP), at the Satellite Interface Statistics submenu enter **g** to select **Display PEP Statistics**. The screen in Figure 109 appears.

```
 TCP Spoofing Flag          :Disabled
    Rx PBP                     :3
    Rx PBP Bad Checksum        :0
    Tx PBP                     :0
    Rx TCP                     :0
    Rx TCP Bad Checksum        :0
    Rx TCP Spoofed             :0
    Rx TCP SYN Unspoofed       :0
    Rx TCP Unspoofed           :0

    Priority                    1          2          3          4
    PBP Status                Closed     Closed     Closed      Closed
    PBP Rx Pkts                0          0          0          0
    PBP Tx Pkts                0          0          0          0
    PBP Rx SACK                0          0          0          0
    PBP Tx SACK                0          0          0          0
    PBP Rx RST                 0          0          0          0
    PBP Tx RST                 0          0          0          0
    PBP Snd/Rcv Win           0/   0     0/   0     0/   0     0/   0
    W2L limit/curr            0/   0     0/   0     0/   0     0/   0
    L2W limit/curr            0/   0     0/   0     0/   0     0/   0
```

Figure 109: Display PEP Statistics screen

The Final Test Menu

The Final Test Menu is not used by installers. It is used at the factory to ensure the various DW6000 components are functional. The menu is shown below.

```
Final Test Menu:
  (a) LED Test Pattern
  (b) Ethernet Ports Test
  (c) Modem Signal Test
  (d) USB Port Test
  (g) Factory Information Read
  (z) Return to Main Menu
```

Figure 110: Final Test Menu

Other options

This section describes some other options in the Main Menu.

Display active routing table

Menu Option (**d**) displays the current data in the Active Routing Table, shown in Figure 111. This data is read-only.

```
Main Menu (<?/CR> for options): d

Active Routing Table:
Entry  Destination Network  DW6000 Address
Subnet Mask

Main Menu (<?/CR> for options):
```

Figure 111: Active Routing Table display

Reset history

Menu Option (**h**) displays the reset history for the DW6000 as shown in Figure 112. One of the most recent 8 reset logs may be displayed. Index 0 is the most recently logged reset.

```
Time of Reset :      THU JAN 01 05:47:35 1970
Asserted at   :      t=tInterface ../../../source/sd/cim.c#1918:
Reset Type    :      Valid Software Reset
Reset Reason  :      Manual reboot via Install Console rr command
```

Figure 112: Reset history

This data is read-only.

Note that you reset the DW6000 by typing **rr** at the Main Menu prompt and pressing Enter. You can force the DW6000 to download new keys and new software by typing **rd** and pressing Enter.

Reading factory information

Option (**g**) displays read-only information from the manufacturer. This option automatically returns to the Final Test menu.

Appendix D

Configuring the installer laptop for IP addressing

This chapter explains how to configure your installer laptop PC so that you can register the DW6000. All DW6000s come from the factory with Dynamic Host Configuration Protocol (DHCP) enabled. Therefore, your installer laptop PC must have DHCP enabled and set to automatically obtain IP addresses.

Windows 98SE and ME

1. On the client computer, go to *Start→Settings→Control Panel* and double-click **Network**. See Figure 113.

Note: On Windows ME computers, choose View All Control Panel Options to see the Network icon.

2. A list of network components will be displayed. See Figure 114.

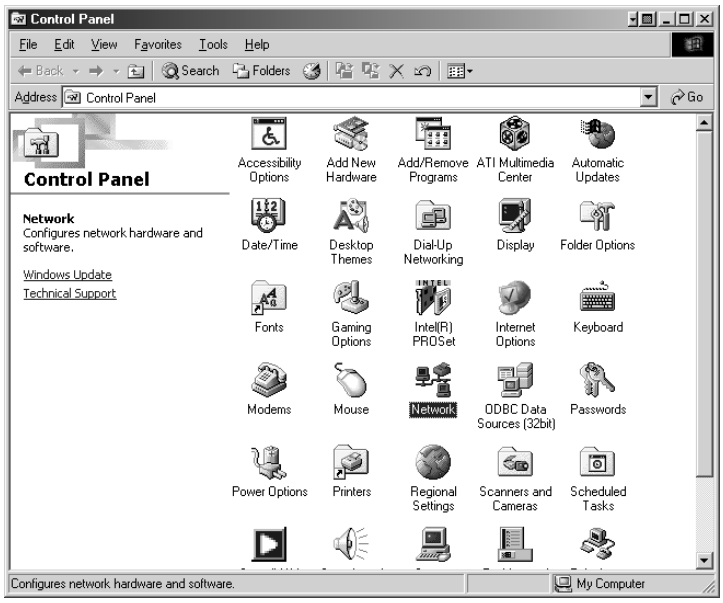

Figure 113: Control Panel

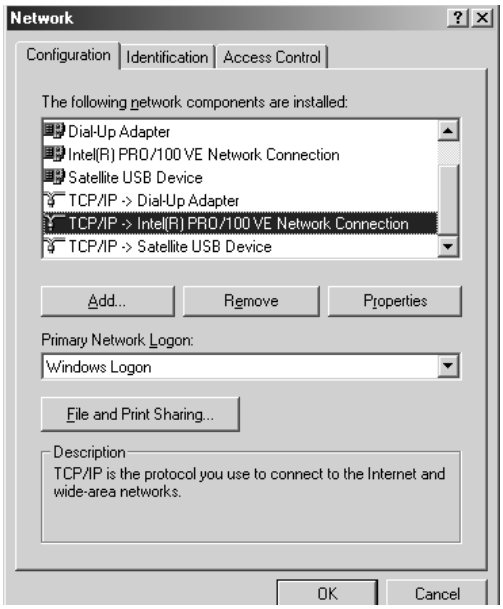

Figure 114: Network window

3. Select the TCP/IP entry associated with Network Interface Card (NIC) and then select Properties. The TCP/IP Properties window appears. See Figure 115.
4. In the IP Address tab, select Obtain an IP address automatically.
5. Select the DW6000 tab. Remove any installed DW6000s by selecting them and selecting **Remove**. See Figure 116.
6. Select **OK** to accept the updates for the TCP/IP properties

7. Select **OK** to close the list of network components. Windows may request the installation CD-ROM to complete updating the TCP/IP settings.
8. Restart the computer if it does not do so automatically.

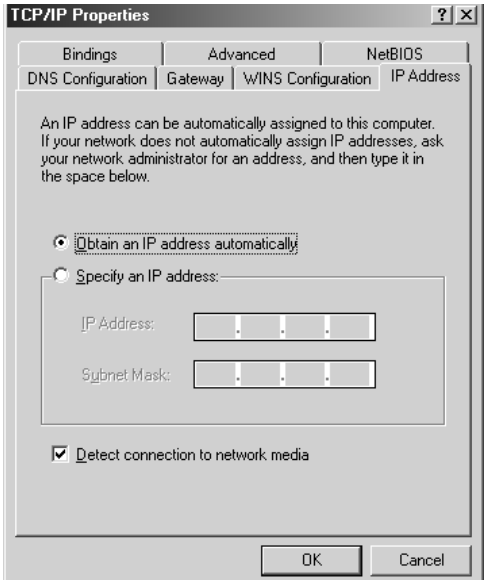
TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
Detect connection to network media
OK
Cancel

Figure 115: TCP/IP Properties

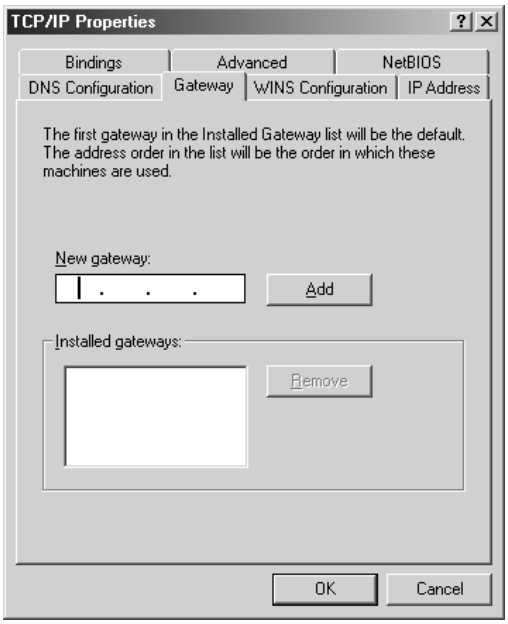

Figure 116: DW6000 tab

Windows 2000

1. On the client computer, go to *Start→Settings→Control Panel* and double-click Network and Dial-up Connections.
2. A list of network adapters appears. See Figure 117. The Local Area Connection adapter must be listed. If it is not, the network is not installed correctly.
3. Right-click the Local Area Connection icon that represents the network adapter that connects the computer to the DW6000 and select Properties. The Local Area Connections Properties window appears. See Figure 118.
4. Ensure that the Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked. If NetBEUI is installed, uninstall it.

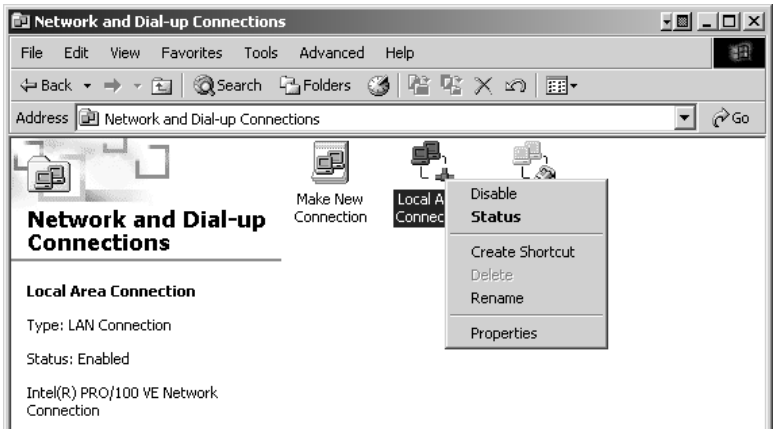

Figure 117: Network and Dial-up Connections

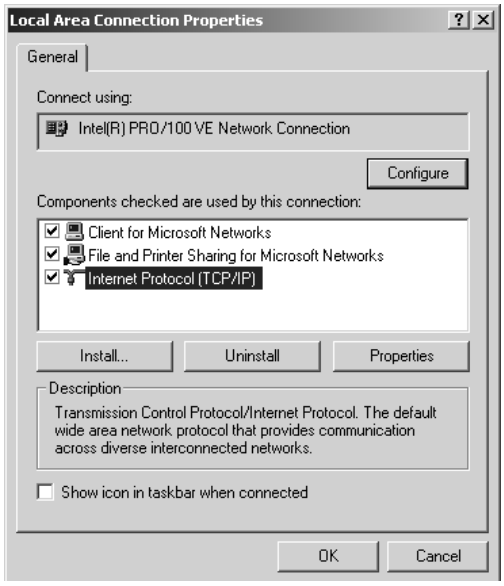

Figure 118: Local Area Connection Properties

5. Select Internet Protocol (TCP/IP). Be careful not to uncheck the checkbox.
6. Select the Properties button. The Internet Protocol Properties window appears. See Figure 119.
7. Ensure that both Obtain an IP Address Automatically and Obtain DNS Server Address Automatically are selected. If not, select them.
8. Select **OK** to close the open dialog boxes and finish the configuration.
9. Restart the computer even if Windows does not require you to do so. This will ensure that the network settings are automatically reset.

Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 119: Internet Protocol Properties

Windows XP

1. Go to Start→ Settings→ Control Panel. Double-click the Network and Dial-up Connections icon.

Note: If the Control Panel is in category view select Network and Internet Connections then select Network Connections.

2. A list of network adapters will be displayed. A Local Area Connection must be listed under LAN or High-Speed Internet. If not, the network is not installed correctly. See Figure 120.
3. Right-click the Local Area Connection icon that represents the Network adapter that connects the computer to the Satellite DW6000 and select Properties.

Note: If the Local Area Connection icon appears with a red X then check your connections. The red X must not be present in order for you to be successful.

4. Ensure that the Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked. If NetBEUI is installed, uninstall it. See Figure 121.
5. Select Internet Protocol (TCP/IP) and select Properties. See Figure 122.

Note: Be careful not to uncheck the Internet Protocol when you select it

6. Ensure that both Obtain an IP address automatically and Obtain DNS server address automatically options are selected. If not, select them.
7. Select **OK** to close the open dialog boxes and finish the configuration.

Restart the computer even if Windows does not require you to do so to ensure that the network settings are automatically reset.To confirm reset, check Internet Protocol (TCP/IP). The items in Step 6 should be selected.

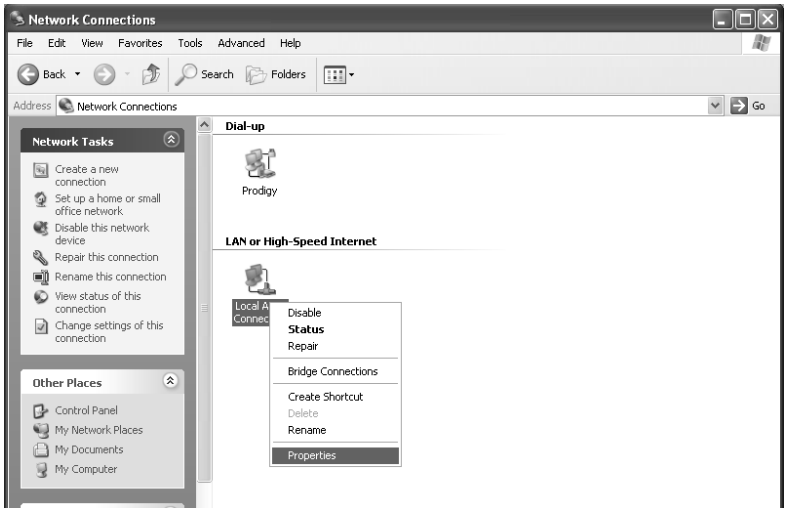

Figure 120: Network Connections

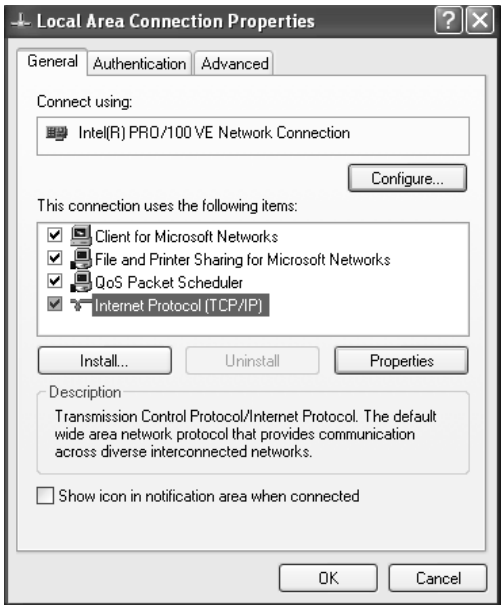

Figure 121: Local Area Connection Properties

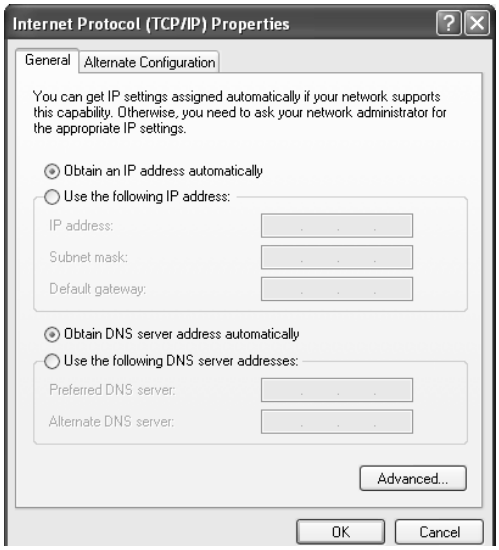
Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 122: Internet Protocol Properties

Appendix E

Installing DVADB

DVADB features

The DIRECWAY Virtual Private Network (VPN) Automatic Dial Backup (ADB) (DVADB) feature provides a backup infrastructure to the DW6002 should the satellite link fail or degrade below an acceptable threshold.

DVADB automatically switches the DW6002 to a terrestrial dial-up telephone network with minimal interruption and loss of customer traffic. DVADB introduces no additional load on the DW6002 and does not affect any existing DW6002 features, but will make the DW6002 send and receive traffic at a slower rate.

To use DVADB, the DW6002 via dial-up connection to a global network of Points of Presence (POPs). Each POP is an access point to the Internet. The packets are sent from the POP to the NOC, which in turn forwards them to the destination server.

DVADB pre-installation

The following must be fulfilled before DVADB can be installed:

- The DW6002 must be installed, commissioned, and functioning before DVADB can be installed.
- The customer must have an analog phone line.
- A telephone splitter and RJ-11 telephone cable is required.

Installation procedure

To install DVADB, do the following:

- Install the hardware
- Configure the software
- Test to ensure DVADB is functioning

Before beginning the installation, check the telephone line dialout sequence. If it does not match the sequence in the installation specification, or as shown in the Advanced pages, (see *Troubleshooting DVADB* on page 134), contact installer support.

Install hardware

1. Attach the RJ-11 cable from the DW6002 Gateway telco port to a phone splitter (such as the one built into a surge protector). Then connect the splitter to the existing phone line. The final configuration will look like Figure 123.

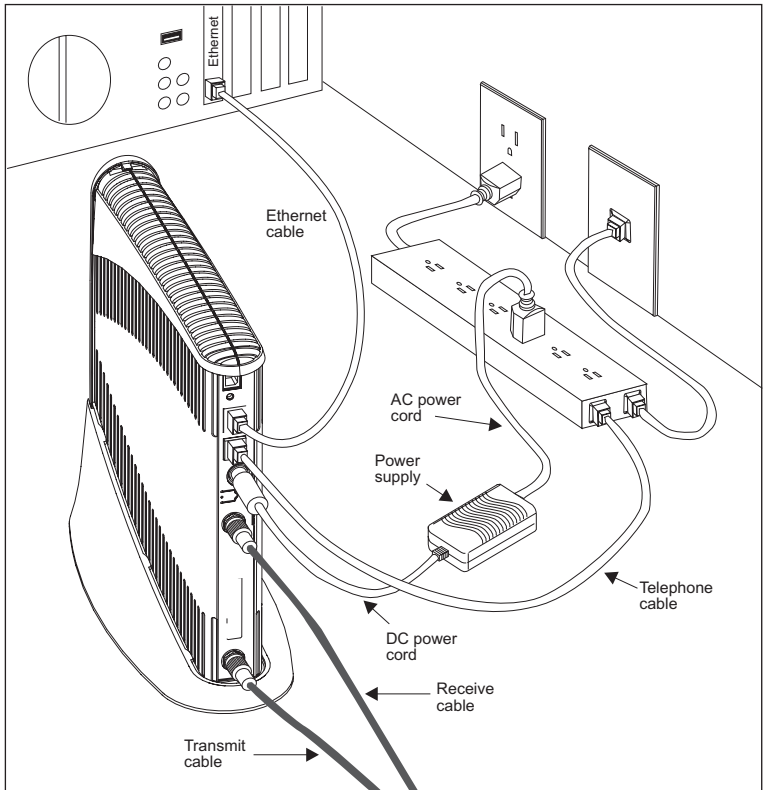

Figure 123: Final hardware installation for DVADB

Configure software

Remember you must commission the DW6002 before you can set up the VADB modem.

1. Open the User Interface.
2. Click **System Information**.
3. Verify the software release number is 4.2.0.7 or above. If it is not, contact installer support to make sure the correct software is downloaded to the unit.
4. Use a browser to open the *Advanced* pages. Type the URL for the DW6002 User Interface and add **`/fs/advanced/advanced.html`** and press **`Enter`**. The Advanced pages interface appears. See Figure 124. (You can also type **`www.direcwaysupport.com/fs/advanced/advanced.html`**).
5. From the right most drop-down box, select vadb_config_show(). See Figure 125.
6. Verify vadb_net_enabled and vadb_rem_enabled are both set to ENABLED. If they are not, contact the NOC and request the values be updated.

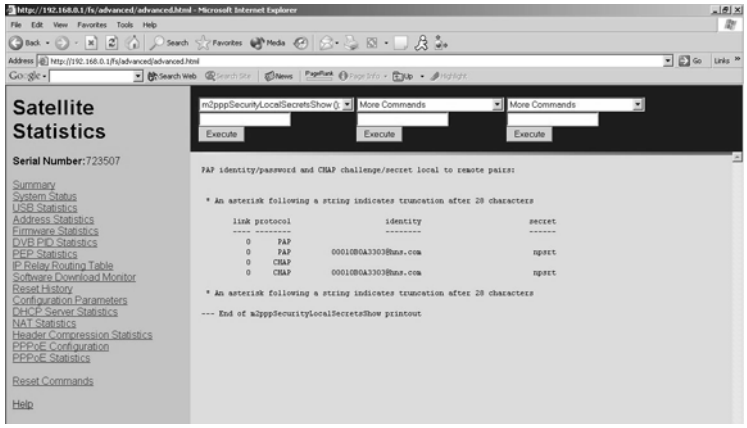

Figure 124: Advanced pages

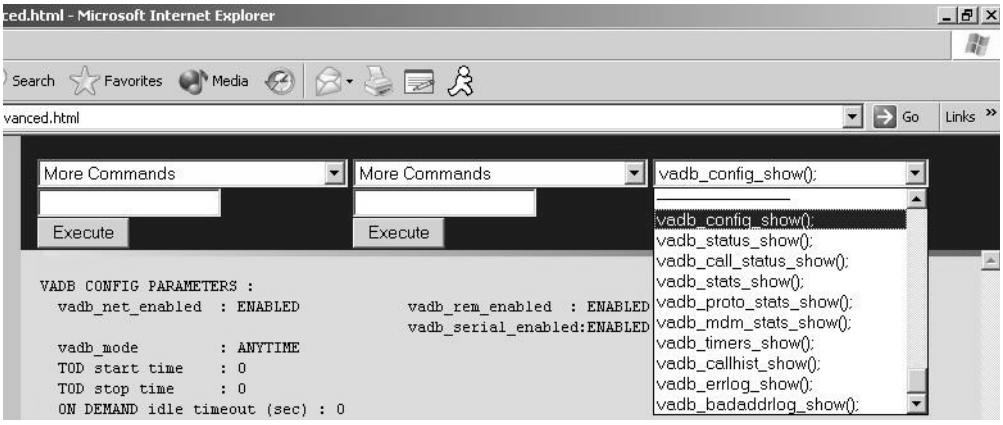

Figure 125: Verifying DVADB enabling

Test functioning

You will use the Advanced pages to test the DVADB connection. Access the Advanced pages by entering **`http://192.168.0.1/fs/advanced/advanced.html`** in the URL location bar. The Advanced pages appear.

1. In the right-most drop-down menu choose *vadb_manjual_init*.
2. Click the Execute button.
3. Once the VADB modem connects, verify that Link in use is set to VADBLink.
   a. Open the Advanced page if it is not still open.
   b. From the right-most drop-down box, choose vadb_call_status_show. See Figure 125.
   c. Verify that Link in use is set to VADBLINK. See Figure 126 for location of Link in use on bottom of screen.
4. Verify the DW6002 can ping a non-local URL, such as www.mydirecway.com.
   a. Open the **Run** dialog box by selecting *Start→Run*. Type **`Command`** and click OK.
   b. Type ping **`www.mydirecway.com`** and press **ENTER**.

   If the client fails to ping the host, the computer will report that no packets were received. There are issues with either the network hardware or configuration. Check the LAN connections and refer to the instructions that were provided with the network hardware, and retry the ping test.
5. Select vadb_manual_term() fom the right-most drop-down menu and click Execute to reconnect the spacelink and end the test.

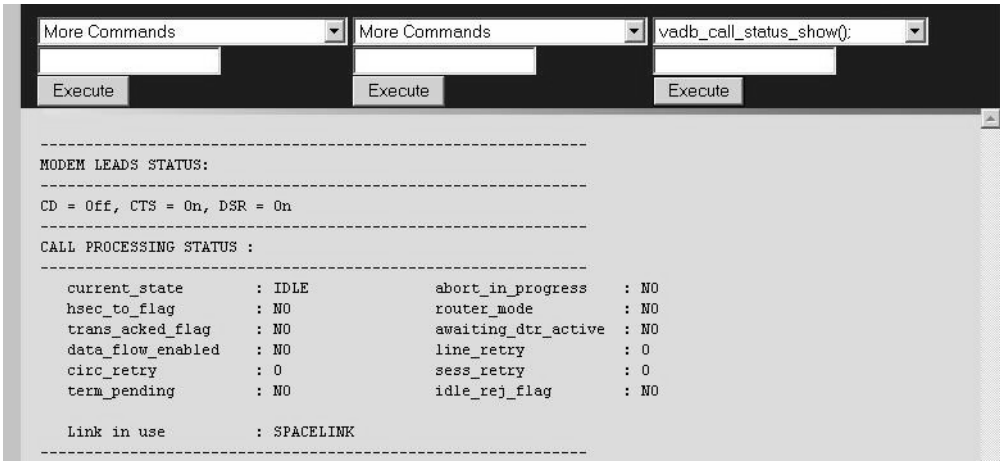

Figure 126: Verify VADBLINK

Troubleshooting DVADB

Use the troubleshooting procedure below if the DW6002 is unable to connect through VADB, or not able to authenticate with the server. Before starting the procedure, verify the DW6002 is commissioned.

1. Verify the Transmit LED is lit before attempting to connect via VADB. If it is not then check the connections and serial cable.
2. Attempt to connect via the internal modem three times. If the connection fails all three times, continue with Step 3. If the internal modem connects, the DW6002 is set up for use with VADB.
3. Verify the phone number is correct and has the right prefix and suffix.
   a. Open the *Advanced* pages.
   b. From the right most drop-down box, choose vadb_config_show(). See Figure 127.
   c. Verify prim phone_num and bakup phone_num are correct and have the correct prefix and suffix.
4. If the number being dialed is incorrect, request the NOC update the phone number(s).

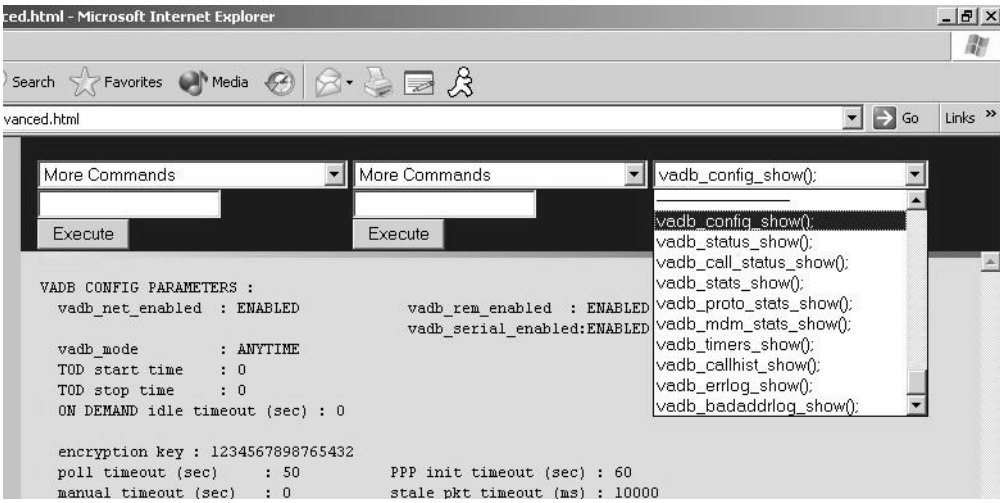

Figure 127: Checking phone numbers

5. Attempt to connect via the internal modem three times. If the connection fails all 3 times then continue with Step 6. If the internal modem connects, then the DW6002 is set up for use with VADB.

6. Look up the Username and Password on the DW6002.
   a. Open the Advanced Interface Page.
   b. From the right most drop-down box, choose vadb_password_show.
   c. Note the Username here is appended by @hns.com added. For example, in ABC@hns.com, the user name is ABC.
   d. The entry next to password is the password. See Figure 128 (note it is just an example).

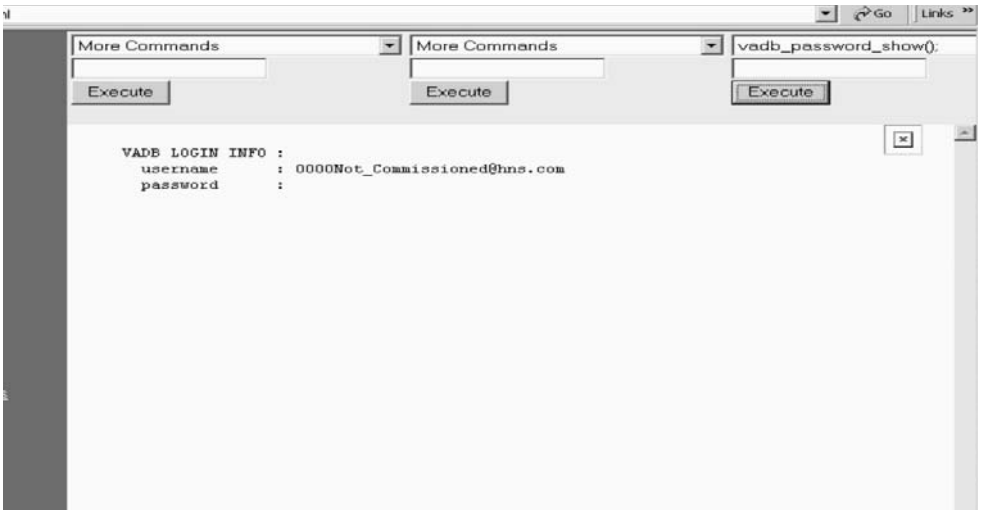

Figure 128: Verify Password

Appendix F

Installation checklist

Installation summary and checklist

The following DW6000 components are installed:

- Antennas (outdoor unit or ODU)
- Coaxial cable (IFL)
- DW6000

The main tasks required to install an DW6000 are summarized below. For dialup commissioning, the customer should have an analog phone line and a functioning Ethernet interface.

- ☐ **Assemble and install the satellite antenna.** Run cables from the outdoor components to the indoor equipment. Clearly label the receive and transmit coaxial cable at the antenna, ground block, and indoor unit connectors.
- ☐ **Connect the DW6000 to the installer PC Ethernet port and power up the DW6000. Use surge protectors.**
- ☐ **Perform antenna pointing and automatic cross pol.**
- ☐ **Start commissioning the unit, using either SBC or Websetup if SBC is not available. Register the customer and select subscription options.**
- ☐ **Transfer of parameter information to DW6000. Exit Websetup.**
- ☐ **Reboot the DW6000 to finish registration.**
- ☐ **Disconnect installer laptop PC and connect the DW6000 to the customer's computer.**
- ☐ **Verify customer operation, information recorded on Quick Start Guide cover, icon placed on customer PC desktop, customer surfed to myDIRECWAY.COM and downloaded DW6000 User Guide, and receive and transmit cable labeling.** Optional: assist in customer computer configuration.

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